RESPIRATORY SYSTEM

MAIN CATALOGUE

CASE 105
The only information available for this old specimen is that the patient had been breathless and had a cough for some months before death.
The specimen is a slice of the right lung of an adult. Throughout the lung fields are numerous small, consolidated pale yellow areas up to 5mm in diameter. There is patchy anthracosis and the hilar lymph nodes are enlarged and black due to carbon deposition, except for focal yellowish areas similar to those seen in the lung. The pleura shows some fibrous adhesions.
Diagnosis: Miliary tuberculosis
Comment: The presence of widespread consolidated areas throughout the lung is also seen in bronchopneumonia, but against this diagnosis is the extensive nature and tiny size of these lesions. In addition, involvement of the hilar lymph nodes in the pattern seen here is not typical of bronchopneumonia.

CASE 114
This is a surgical specimen from an adult who became weak and hoarse over a period of 10 months and had a cough with sputum and dysphagia.
The specimen is the larynx and the upper few cm of the trachea. There is an irregular nodular ulcerated area involving both the left true and false vocal cords which spreads across the midline on to the right vocal cord. Patchy areas of haemorrhage are noted elsewhere.
Diagnosis: Carcinoma of the larynx
What type of carcinoma is this likely to be? Squamous cell carcinoma

CASE 331
No clinical information is available.
The specimen is a section of left lung. Apart from anthracosis, the upper lobe appears normal, whilst the lower lobe appears pale and solid throughout its entirety. The overlying pleura demonstrates a discoloured dense fibrinous exudate.
Diagnosis: Lobar pneumonia

CASE 485
No clinical information is available.
The specimen is of both lungs of a child with trachea and portions of spleen and a kidney. All lobes of both lungs are uniformly studded with pale solid nodules up to 2mm in diameter, which occasionally coalesce. Nodules can be seen beneath the pleura. The hilar lymph nodes and those alongside the trachea are enlarged and show areas of caseous necrosis.
On the reverse side of the jar similar scattered tiny nodules are present within both the spleen and kidney.
Diagnosis: Miliary tuberculosis

CASE 751
No clinical information is available.
The specimen consists of the heart and lungs. The right ventricle and the pulmonary artery have been opened to display a large ante-mortem thrombo-embolus blocking the main trunk of the pulmonary artery and extending into the main right and left pulmonary arteries. On close inspection, the thrombo-embolus can be seen to be coiled and folded up on itself.
Diagnosis: Massive pulmonary embolus - so called saddle embolus

CASE 3139

The patient was a woman aged 23 who had had an episode of haemoptysis 5 years earlier. Investigations at that time had revealed a large circular cavity near the hilum of the right lung. The hydatid complement fixation test was negative and no tubercle bacilli were present in the sputum. She died as the result of a massive haemoptysis.

What are the possible causes of a cavitating lesion in the lung?

A cavitating lesion may be the result of infection - e.g. lung abscess or tuberculosis - or malignancy, typically a primary lung carcinoma that is growing so rapidly it exceeds its own blood supply resulting in central necrosis. Much less common causes include fungal or parasitic infections, vasculitic diseases such as Wegener's granulomatosis, and resolving infarcts. Necrotic tissue can drain away via airways.

The specimen shows a sectioned right lung. A large cavity 8cm in diameter is present in the apical segment of the lower lobe. It has a relatively thin fibrous wall and is surrounded by compressed lung. The cavity contains a large pale friable mass together with some clotted blood in the bottom of the cavity.

Diagnosis: "Fungus ball" or aspergilloma in a pre-existing pulmonary cavity

Comment: This is a difficult diagnosis to make macroscopically. The presence of friable necrotic material within the lesion in this case may also suggest some form of abscess, but this is not in keeping with the history. The underlying cause of the cavity is not apparent. Tuberculosis is one possibility; a congenital cystic lesion is another.

The fungus *Aspergillus* is a ubiquitous environmental organism. It sometimes colonises pre-existing cavities e.g. those of secondary tuberculosis, with no or minimal invasion into the tissues. The organism can also cause allergic bronchopulmonary aspergillosis (resulting from colonization of bronchi in asthmatics), bronchocentric granulomatosis and invasive infection, primarily in the lung, in immunocompromised persons.

CASE 3872

The patient was a woman aged 24 who had sinusitis for a week, followed by cellulitis of the face. Signs of pneumonia developed at the right base and she died after one week in hospital. At post-mortem a right cavernous sinus thrombosis was also found

The specimen consists of the sectioned right lung. Scattered throughout are irregular pale areas of necrosis 1 - 15mm in diameter, occasionally with central cavitation.

Diagnosis: Multiple pulmonary abscesses

Comment: In view of the history, the most probable cause is seeding of the lungs by organisms in septicaemia. *Staphylococcus aureus* was grown at post-mortem from the blood and from the lungs.

CASE 4183

The patient had been treated for tuberculosis by the induction of a right artificial pneumothorax. This was not entirely successful and was complicated by a pleural effusion and a tension pneumothorax.

The specimen consists of lung, pleura and oesophagus. From the front the cavity of a chronic empyema, lined by thick, creamy exudate and surrounded by thickened fibrotic pleura is seen. There is a central hole 18mm in maximal diameter, which represents the opening of a fistula extending between the pleura and the lung. The lung is collapsed.

Diagnosis: Tuberculous broncho-pleural fistula and empyema

CASE 4195

This patient was an inmate of a mental institution. He developed signs of pulmonary infection thought to be tuberculosis, but he died before a diagnosis could be established.

The specimen shows the cut surface of an anthracotic right lung opened to display a cavitating lesion 60mm in diameter in the substance of the lower lobe. The lesion is lined by fragments of necrotic lung hanging from its wall. There is no capsule. A further 15mm cavity lined by exudate is present in the upper aspect of the lobe. The adjacent lower lobe shows uniform consolidation throughout. In addition, there are

some scattered patches of consolidation in the upper lobe and ante-mortem thrombo-emboli are noted in medium sized arteries in upper and lower lobes. Patchy dense brown fibrinous exudate is present predominantly over the lower lobe.
Diagnosis: Lobar and bronchopneumonia with acute abscess formation

CASE 4207
No clinical information is available.
The specimen consists of the lungs and attached mediastinal structures of a baby, viewed from the front. There is a well-circumscribed, uniform pale yellow lesion 15mm in diameter beneath the pleura of the upper segment of the left lower lobe (on the right in the pot). It has a thin fibrous capsule. More irregular pale consolidated tissue is present medially. Within the hilar and paratracheal regions there are enlarged lymph nodes, with a similar uniform pale appearance.
Diagnosis: Primary tuberculosis: Ghon complex

CASE 4322
The patient was a man aged 37 who died in 1942 who developed pneumonia some weeks before his death. After a brief improvement his symptoms recurred and he became steadily worse and died.
The specimen shows the cut surface of the left lung that is uniformly studded with tiny pale yellow nodules about 0.5mm in diameter. The upper lobe is more heavily involved.
Diagnosis: Miliary tuberculosis

CASE 4409
The patient was a 5 year old girl who collapsed after a tonsillectomy while under anaesthesia. Resuscitation was ineffectual. At post-mortem the thymus was large as were the lymph nodes, raising the suspicion of status thymico-lymphaticus (a then fashionable but really mythical 'explanation' for a sudden unexpected death).
The specimen shows the cut surface of the right and left lungs of a child. A large area of pale yellow consolidation is present in the upper and lower lobes of the right lung. Its border is irregular and ill defined. Small patches of similar consolidation are present in the lower lobe of the left lung.
Diagnosis: Consolidation suggesting pneumonia
Comment: Histology showed lipid-filled macrophages packing the alveoli indicating that this is so-called lipoid pneumonia. This condition may be seen distal to obstructive bronchial lesions (e.g. tumours) or rarely as a result of the aspiration of mineral oils (e.g. paraffin oil, sometimes given for the treatment of constipation).

CASE 4479
The patient was a girl aged 5 who developed bronchopneumonia secondary to whooping cough. She was treated with sulphonamides without effect. She then developed surgical emphysema and was found to have agranulocytosis, attributed to the sulphonamide treatment. Despite penicillin and blood transfusions the child died a short time later.
The specimen consists of portions of both lungs of a child. All lobes are congested and there are patchy pale yellow areas of consolidation varying in size up to about 10mm in diameter in all lobes sectioned. Some areas show central necrosis but no cavitation. The pleura of one lung shows patchy brown fibrinous exudate. At the base of one lobe (probably right lower) is a 2cm area of greyish discolouration with surrounding congestion, possibly an infarct.
Diagnosis: Bronchopneumonia
Comment: In view of the history of agranulocytosis, the possibility of an opportunistic cause should be considered. In this case histology revealed *Aspergillus* as the causative organism. This is an example of invasive aspergillus infection. Histologically, the areas of consolidation represent areas of infarction secondary to vascular invasion by the organisms.

CASE 4617
The patient was a miner who had a 6 month history of cough, loss of weight, lassitude and recurrent fever. He then developed weakness of his arms and legs, diplopia, slurred speech, restlessness and irritability. There was gross papilloedema. At post-mortem advanced cryptococcal meningoencephalitis affecting the brain and spinal cord was found.
The specimen consists of an anthracotic left lung. In the posterior basal segment of the lower lobe is a large round pale area of consolidation, 7cm in diameter.
Diagnosis: Cryptococcosis
Comment: Macroscopically, the differential diagnosis is between a pneumonic or neoplastic process. The clue that this could be something unusual is the fact that the patient was diagnosed with cryptococcal meningoencephalitis. This results from infection by *Cryptococcus neoformans,* an encapsulated yeast found in soil and bird droppings. The lung is the primary site of infection, although this is often asymptomatic, from where the organisms spread to the CNS. In this case, histology confirmed the diagnosis of cryptococcal pneumonia. Infection may develop in otherwise healthy individuals but is more common in immunocompromised persons.

CASE 4760
The patient was a man aged 28 who had a persistent cough with copious sputum after an attack of bronchopneumonia at the age of 10. X-ray showed a large cavity in the right lower lobe. A right lower lobectomy was performed.
The specimen consists of the resected lobe sectioned to show a large encapsulated cavity about 9cm in diameter at its base. Thick fibrous septa cross the cavity that also demonstrates patches of haemorrhage in its wall. The adjacent lung is compressed. A large abnormal vessel enters the lower border of the lung to supply the wall of the cavity, seen on the reverse of the specimen.
Diagnosis: Intralobar sequestration
Comment: This is a difficult specimen that undergraduate students would not be expected to diagnose. Intralobar sequestration is a congenital condition where lobes or segments of lung are not connected to the normal bronchopulmonary tree. The blood supply also comes direct from the aorta or its branches rather than from the pulmonary arteries. The main problems that result from this condition are recurrent localised infection or bronchiectasis.

CASE 4946
The patient was a man aged 48, who presented initially with right middle lobe pneumonia. He responded to antibiotic treatment, but once the consolidation had cleared, a chest x-ray revealed an opacity in the right hilar region. The Mantoux test was negative and repeated sputum examinations showed no tubercule bacilli. Bronchoscopy suggested the right middle lobe bronchus to be compressed from outside, and a small white area was visible in the right anterior basal bronchus, from which a biopsy was taken. Histology was inconclusive but in view of the strong possibility that the lesion was malignant, a pneumonectomy was performed.
The specimen consists of the middle and lower lobes of the lung sectioned to display a pale fleshy well-circumscribed rounded lesion 30mm in diameter near the hilum. It is sharply demarcated from the adjacent lung and appears to be arising from the wall of and is causing narrowing of a bronchus.
Diagnosis: Intrabronchial tumour, possibly carcinoid, possibly some sort of bronchial gland tumour
Comment: This is a difficult case. The tumour is obviously not a typical lung carcinoma. There are a number of tumours that may have a predominantly intrabronchial component. These include central carcinoids and a variety of benign and malignant tumours that arise from the bronchial mucus glands. Extension into adjacent lung parenchyma may also occur. These often well-circumscribed tumours were once termed ‘bronchial adenomas’. Presentation may result from infection secondary to bronchial obstruction or localised bronchiectasis caused by the slow growing tumours. Histology would be required for

definite diagnosis. Carcinoids are essentially well-differentiated tumours of neuroendocrine differentiation (small cell undifferentiated carcinomas are poorly differentiated neuroendocrine carcinomas) showing features of Kulchitsky type neuroendocrine cells seen in the normal bronchial mucosa. There are a variety of types of carcinoid in the lung including central, peripheral and atypical.

CASE 5176

The patient was a man aged 34 whose illness had begun 5 years earlier with loss of weight and pain in the left side of the chest, but no cough or fever. He was found to have left-sided pleurisy, and his sputum was positive for tubercle bacilli.

A left pneumothorax was induced and was refilled 9 times. Then spontaneous collapse of the left lung occurred and a pleural effusion developed which continued. It was drained for 6 months by an open tube drain. Finally a left dissection pleuro-pneumonectomy was carried out.

The specimen consists of the excised lung and pleural cavity. The lung is markedly compressed. The pleural cavity seen on the right and apex of the specimen is expanded and has a thick fibrous wall lined by dense exudate.

Diagnosis: Encysted tuberculous empyema

CASE 5177

This patient was a previously fit man aged 23. Mass x-ray survey in 1949 showed a cyst in the right lower lobe. Four months later the cyst ruptured into the bronchial tree and the patient coughed up a large amount of white frothy bitter fluid. There was no haemoptysis. Three weeks later he developed a productive cough and a high fever. There was no leucocytosis but there was an eosinophilia of 10% in the blood. Lobectomy was performed.

What is a cyst? A cyst is an enclosed epithelial lined sac filled with fluid or semisolid material such as keratin.

What is an abscess? An abscess results from localised infection by certain types of bacteria, with suppurative inflammation and necrosis of tissue. It contains pus and has no epithelial lining. A lung abscess (or cyst) may cavitate if the contents drain via the bronchi.

The specimen is the sectioned lobe showing a rounded cyst 5cm in diameter with a thin fibrous and calcified capsule. The cyst contains white membranous material that appears folded. The overlying pleura shows some fibrous thickening.

Diagnosis: Hydatid cyst

Comment: This is caused by the parasite *Echinococcus granulosus*. The normal life cycle of this tapeworm is between dogs and sheep. Humans contract the infection from dogs. The eggs are ingested and pass into the duodenum where they hatch and invade into the body.

CASE 5582

The patient was a woman aged 58 who had died after having been ill for 4 years with cough, night sweats, white sputum and marked loss of weight. On examination there were signs in the chest, a third heart sound and a grossly enlarged liver and spleen. A lymph node biopsy showed granulomatous inflammation, but no acid-fast bacilli were identified.

What is meant by the term granulomatous inflammation? Granulomatous inflammation is a form of chronic inflammation characterised by clusters of activated epithelioid macrophages.

What are the possible causes of granulomatous inflammation in general?

Causes include tuberculosis, sarcoidosis, Crohn's disease, fungal infections, leprosy, syphilis, cat-scratch disease, lymphoma, suture material, keratin, amyloid and urate crystals.

The specimen consists of a portion of the left lung that shows patchy thickening of alveolar walls.

Diagnosis: Pulmonary fibrosis, probably related to sarcoidosis

Comment: Pulmonary fibrosis is a disease of many causes but is sometimes idiopathic. There is apparently no history of occupational exposure or rheumatoid arthritis in this case. The night sweats, cough, loss of

weight and the lymph node biopsy result suggest tuberculosis but the appearance of the lung is not that of tuberculosis. This is probably a case of sarcoidosis, a systemic disease of unknown cause characterised by the presence of non-caseating granulomas in many organs. Enlargement of the liver and spleen are also in keeping with this diagnosis. Typically patients have bilateral hilar lymphadenopathy, and the diffuse lung involvement seen here is less common.

CASE 6155

The patient was a man aged 32 whose health had been poor for 12 years, with a chronic cough and the production of 250-350ml of purulent sputum each day. His respiratory reserve was limited and he had repeated attacks of pleurisy and pneumonia. There were many crackles and wheezes to be heard in the chest. A bronchogram showed dilated airways in the collapsed right middle and lower lobes and to a lesser degree in the left basal segment. The right middle and lower lobes were resected (this specimen) and there was marked improvement in his general health, with a reduction of sputum to about 50-75ml/day, and a considerable increase in the respiratory reserve. Six months later resection of the left basal segments was performed with further symptomatic improvement.

The specimen consists of the right middle and lower lobes. Abnormally dilated airways can be seen extending from the central part of the specimen, out to just beneath the pleural surface. The walls of these dilated airways are lined by fibrous trabeculae. The intervening lung is collapsed and focally scarred.

Diagnosis: Bronchiectasis

What is the pathogenesis of this condition?

Bronchiectasis refers to the irreversible dilatation of bronchi as a consequence of the destruction of the muscular and elastic elements of their walls. Chronic bronchial obstruction (e.g. by slowly growing tumours, foreign bodies, impacted mucus in cystic fibrosis, cilial dysfunction) with subsequent recurrent infection lead to chronic inflammation with damage to and weakening of the bronchial walls which dilate. Fibrosis also develops in association with chronic inflammation leading to permanent dilation.

Bronchial dilation with chronic inflammation and fibrosis may also develop in the setting of recurrent pneumonia leading to non-obstructive bronchiectasis (now uncommon), particularly in children.

What symptoms may be experienced by patients with bronchiectasis?

Patients with bronchiectasis complain of persistent cough with the production of foul-smelling sputum (and they're not the only ones complaining about it), episodic fevers, haemoptysis (often) and with more widespread disease, dyspnoea. If the disease is long-standing and diffuse, they develop cor pulmonale with symptoms and signs of right ventricular failure.

What are the possible complications?

- cor pulmonale
- chronic respiratory failure
- metastatic brain abscesses
- amyloidosis (rare)

CASE 6253

The patient was a woman aged 32 who had had pulmonary tuberculosis for 14 years. At the onset x-ray showed cavitation in the left upper lung field and the sputum was positive. A left artificial pneumothorax was performed two years later but was discontinued after a pleural effusion. Three years later there was still evidence of a cavity about 4cm in diameter in the left lung. A two-stage thoracoplasty was performed and after a short convalescence she returned home and remained quite well, married, bore three children and worked hard until a year before her death when she developed poliomyelitis in both legs. Two weeks later she had a haemoptysis and she was transferred to a tuberculosis hospital where she had further haemoptysis, including one of 1.7l, and eventually she was coughing up half a cup of bright blood 4-hourly. A left pneumonectomy was considered the only effective treatment and thereafter she had no further bleeding and convalesced satisfactorily.

The specimen consists of the sectioned left lung. The lung is collapsed and contains several scattered encapsulated caseous nodules up to about 10mm in diameter. Encysted within the pleural cavity there is thick light brown caseous exudate that is surrounded by a thick fibrous wall.
Diagnosis: Chronic pulmonary tuberculosis with an encysted empyema

CASE 6585
The patient was a man aged 75 who died rapidly after eating breakfast.
The specimen consists of the tongue, epiglottis, larynx and trachea. There is a pale pinkish mass within the trachea, extending from the bifurcation up to the larynx.
Diagnosis: Foreign body in trachea

CASE 6935
The patient was a man aged 68 who had had a cough with occasional haemoptysis for 12 months. X-ray showed an opacity at the apex of the right lung, but no local treatment was given (the year was 1952). He later developed a chronic ulcer on the medial side of the right ankle that was biopsied, revealing adenocarcinoma. The right leg was amputated but he died two days later.
The specimen is the right lung and trachea sectioned to show a rounded pale yellow irregular lesion 50mm in diameter within the apex. Its cut surface shows foci of pale necrosis. Hilar lymph nodes and nodes around the trachea are enlarged and almost entirely replaced by pale yellow tumour tissue similar to the apical lesion.
Diagnosis: Carcinoma of the lung
Comment: Histology showed adenocarcinoma. At post-mortem there were metastases in both suprarenal glands, the left cerebral hemisphere and the mediastinal nodes. The skin lesion is most likely to have been a metastasis also.

CASE 7002
The patient was a man aged 36 who had been known to have pulmonary tuberculosis for 6 years before his death.
The specimen consists of part of the right lung. In the posterior basal segment of the upper lobe is a large chronic oval thick-walled encapsulated cavity measuring 60 x 30 x 40mm. Pale exudate adheres to the wall. In addition, there are scattered pale areas of consolidation up to 10mm in diameter, some of which have coalesced. The overlying pleura shows dense fibrous thickening and the remnants of adhesions.
Diagnosis: Cavitating pulmonary tuberculosis with tuberculous bronchopneumonia
Comment: This bronchopneumonic pattern of infection may complicate either primary or secondary TB, and results from dissemination of infection through the airways. Clinical deterioration is rapid and the condition is known as “galloping consumption”.
The differential diagnosis for this specimen is a chronic abscess in the presence of bronchopneumonia.

CASE 7191
The patient was a girl aged 16 who had a chronic cough with purulent sputum since an attack of bronchopneumonia at the age of 1 year. There had been repeated further episodes of bronchopneumonia. Bronchogram showed grossly dilated airways in the basal segment of the left lower lobe. The left lower lobe and lingular were resected.
The specimen shows the cut surface of the resected lobe. Several abnormally dilated airways extend from the hilar aspect of the specimen to just beneath the pleural surface at the base of the lobe. Fibrous trabeculae line their walls. The surrounding lung substance appears relatively normal, without evidence of fibrosis or collapse.
Diagnosis: Bronchiectasis

CASE 7204
The patient was a man aged 69 who had intermittent pain in the right chest for 2 weeks associated with breathlessness and an unproductive cough. He also complained of colicky right-sided abdominal pain with vomiting and constipation for 4 days. On examination, there were crackles in the chest. Chest x-ray showed large opacities in both lungs. However the Mantoux test was negative and there were no tubercle bacilli in six specimens of sputum. He died a week after admission. At post-mortem a large diaphragmatic hernia was found containing portions of stomach, small bowel, spleen and splenic flexure. This was probably responsible for the bowel obstruction.
The specimen is a slice of anthracotic left lung that shows an ill-defined fibrous mass measuring about 6 x 3cm in the anterior apical segment of the upper lobe. There are scattered smaller but similar lesions elsewhere in the lung. Also noted is an ante-mortem thrombo-embolus in a pulmonary artery branch in the lower lobe (back of pot).
Diagnosis: Scattered areas of fibrosis. Macroscopically the differential diagnosis includes silicosis, tuberculosis, and Wegener's granulomatosis.
Comment: This is not a specimen that undergraduate students would be expected to diagnose. Examination of histological specimens following the autopsy reportedly showed areas of fibrosis with incorporated carbon pigment and central necrosis in which the outline of the tissue was preserved. Peripherally there was some palisading of macrophages. Longstanding endarteritis was prominent in some but not all surrounding arteries. There were no giant cells and no histological evidence of tuberculosis. At post mortem there were similar masses in the kidneys, also with necrosis and evidence of old arteritis. Macroscopically the appearance is mainly of fibrosis, the short history is thus unusual. With both lung and renal involvement, and the histological finding of necrosis, macrophages and arteritis, the process sounds most like Wegener's granulomatosis, however, this could not be confirmed without review of the histology and more clinical information.

CASE 7345
The patient was a woman aged 51 who was treated for 6 months for ulcerative colitis. At post-mortem the large bowel showed patches of discrete ulceration throughout its length, especially in the pelvic colon.
The specimen consists of the left lung with a large cavity 7cm in diameter in the lower portion of the upper lobe. The cavity is not encapsulated and has a ragged wall composed of sloughing lung tissue. The remaining lung appears surprisingly normal. Anteriorly the abscess extends up to the pleural surface, but there is little overlying pleurisy.
Diagnosis: Lung abscess
Comment: The absence of surrounding fibrosis suggests that this abscess is acute. However inflammation and subsequent fibrosis may be minimal in immunocompromised patients.

CASE 7412
No clinical information is available.
The specimen consists of a portion of resected lung cut to display a grossly dilated bronchus with a thick fibrous wall that extends to just beneath the pleural surface. In its lumen are 4 small angular calculi.
Diagnosis: Bronchiectasis with calculi

CASE 7585
The patient was a man aged 56 with a 5 week history of cough productive of dark sputum, shortness of breath and pain in the chest. On examination, there were signs of right and left lower lobar pneumonia with pleural effusions. He died after 2 days in hospital, while still under investigation.
The specimen is of portion of the right lung. The entire lung demonstrates numerous tiny foci of pale consolidation with thickening of the walls of some vessels and bronchi. There is a wedge shaped area of haemorrhagic infarction at the base and ante-mortem thrombo-embolus can be seen in small pulmonary arteries above the infarct. The pleural surface shows focal thickening.

Diagnosis: Lymphangitis carcinomatosis
Comment: The numerous diffuse tiny spots of consolidation suggest miliary TB but the thickening of walls of vessels and bronchi is against this diagnosis. An alternative diagnosis is diffuse fibrosis but the history and pattern are not typical. The picture is that of lymphangitis carcinomatosis, the diffuse permeation of pulmonary lymphatics that run along with vessels and bronchi, by malignant tumour, either primary or secondary.

CASE 7946
The patient was a woman aged 57 who had a 3 year history of increasing cough and weakness. Two years after her symptoms began she was admitted to hospital with pneumonia. Following that admission she became increasingly disabled by shortness of breath until she was confined to bed, requiring oxygen day and night. She became cyanosed at times and her ankles sometimes swelled. On her last admission she was moribund with a BP of 95/60 and she died that day. At post-mortem there was marked hypertrophy and dilatation of the right ventricle.
The specimen consists of a portion of lung. The pleural surface shows a diffuse cobble-stone appearance rather than the normal smooth surface. The cut surface of the lung shows patchy thickening of alveolar walls and at the base there are groups of small cavities 1-2mm in diameter. There is marked calcification of the bronchial cartilage.
Diagnosis: Diffuse pulmonary fibrosis with honeycomb change
Comment: This typically causes chronic respiratory failure and cor pulmonale as illustrated in the above history.

CASE 8920
The patient was a male part-aboriginal child, aged 10 months. He was admitted to hospital with otitis media that cleared with treatment, but during his stay in hospital he contracted tuberculosis from another patient. The Mantoux test was positive and tubercle bacilli were present in the gastric washings. Despite streptomycin and isoniazid the child's condition deteriorated and he died 3 months later.
The specimen is of the sectioned left lung and hilar structures. The hilar nodes are enlarged and demonstrate cream coloured caseous necrosis. In the middle of the lower lobe is a 1cm diameter lesion of similar appearance and the substance of the lung is studded with small pale solid foci 1-2mm in diameter. These foci can also be seen under the pleura where there are tiny scattered fibrous adhesions.
Diagnosis: Primary tuberculosis with miliary spread

CASE 9012
The patient was a man aged 65 who had had attacks of asthma and bronchitis every winter. He was admitted with breathlessness and signs of respiratory failure and died the following day.
The specimen consists of a markedly anthracotic left lung. Both lobes are extensively consolidated and pale in colour. A few scattered patches of aerated lung remain. Widespread acute fibrinous pleurisy is visible on the pleural surface.
Diagnosis: Lobar pneumonia
What are the possible complications of this condition? Possible complications of lobar pneumonia include abscess formation, septic shock and empyema.

CASE 9028
The patient was a chronic alcoholic man with a one-week history of fever and pain in the chest. He died after 4 days in hospital.
The specimen is the sectioned right lung. The upper and middle lobes and upper part of the lower lobe show abnormally large alveolar spaces. In the lower lobe are scattered patches of pale consolidation. Some ante-mortem thrombo-emboli are present in medium-sized vessels but there is no evidence of infarction.
Diagnosis: Emphysema and bronchopneumonia

CASE 9538
The patient was a girl aged 3 months, the daughter of English migrants who lived in a South Australian country town. At the age of 4 weeks the child developed a respiratory infection and was admitted to hospital. She remained intermittently febrile with signs in the chest, before developing cyanosis, dyspnoea and increasing abdominal distension. The spleen was palpable 3 fingers beneath the costal margin. Treatment with penicillin, streptomycin and oxygen was without effect and the child died after 5 weeks in hospital.
The specimen consists of a coronal slice through both lungs of a baby. There are numerous round well-demarcated cream coloured solid caseous masses throughout both lung fields, measuring up to 8mm in diameter. Those at the hilum are enlarged lymph nodes. In the intervening lung tissue there are numerous scattered tiny pale nodules.
Diagnosis: Primary tuberculosis with miliary and bronchopneumonic spread

CASE 10305
The patient was a woman aged 45 who had a chest illness of uncertain nature 15 years previously while living in Russia. When she migrated to Australia from Germany 8 years later the chest x-ray was normal. During a routine screening chest x-ray, a hilar lesion was found. Segmental resection was performed.
The specimen is of the resected lobe cut to display a round, well-demarcated, relatively uniform, pale brown mass 4cm in diameter blocking the hilar bronchus. There is a thin fibrous capsule and no definite evidence of haemorrhage or necrosis.
Diagnosis: Intrabronchial tumour, possibly carcinoid, possibly some sort of bronchial gland tumour
Comment: This is a difficult case. The tumour is obviously not a typical lung carcinoma. There are a number of tumours that may have a predominantly intrabronchial component. These include central carcinoids and a variety of benign and malignant tumours that arise from the bronchial mucus glands. Extension into adjacent lung parenchyma may also occur. These often well-circumscribed tumours were once termed 'bronchial adenomas'. Presentation may result from infection secondary to bronchial obstruction or localised bronchiectasis caused by the slow growing tumours. Histology would be required for definite diagnosis. Carcinoids are essentially well-differentiated tumours of neuroendocrine differentiation (small cell undifferentiated carcinomas are poorly differentiated neuroendocrine carcinomas) showing features of Kulchitsky type neuroendocrine cells seen in the normal bronchial mucosa. There are a variety of types of carcinoid in the lung including central, peripheral and atypical.

CASE 10660
The patient was a 68 year old man who had been a miner in Broken Hill for 12 years. He died in 1956. Before death he had complained of increasing shortness of breath. For 24 hours before admission he had coughed up small quantities of bright blood. On examination there were signs in the right mid-zone but acid-fast bacilli were not detected in the sputum. X-ray showed marked increase in density of the right mid-zone with probable cavitation. He died after 12 days in hospital.
The specimen is the anthracotic left lung cut to show a large cavity measuring 9 x 4cm in the apical segment of the lower lobe. Thick heavily pigmented fibrous trabeculae cross the cavity. Smaller round black nodular lesions up to 6mm in diameter are present below the cavity and in the upper lobe. There is no sign of caseation. The overlying pleura is thickened and 2 bullae are present at the base of the lower lobe.
Diagnosis: Massive silicosis with cavitation
Comment: The pigmentation is due to associated carbon deposition. Silicosis results from the deposition in the lung of particulate silica, inhaled as a result of chronic occupational exposure. Particles are ingested by macrophages and initiate a chronic inflammatory response leading to the formation of initially small fibrous nodules, within which silica particles can be demonstrated. Fibrous masses become large and cavitate. The occurrence of silicosis in the presence of rheumatoid arthritis is known as Caplan syndrome.

CASE 10839

No clinical information is available for this specimen.

The specimen consists of a sectioned pulmonary lobe showing a pale oval lesion measuring 7x8cm. The mass has an irregular border which is focally ill-defined but elsewhere focally sharply separated from the surrounding lung. The cut surface shows fibrous lobulation with intervening mucoid areas and areas of necrosis. Lung distal to the mass is collapsed and consolidated.

Diagnosis: The features suggest a malignant tumour, however, histology revealed that this was a lesion of cryptococcosis.

Comment: This results from infection by *Cryptococcus neoformans,* an encapsulated yeast found in soil and bird droppings. The lung is the primary site of infection, although this is often asymptomatic, from where the organisms commonly spread to the CNS causing a meningoencephalitis. Infection may develop in otherwise healthy individuals but is more common in immunocompromised persons.

CASE 10976

The patient was a young woman aged 28 who migrated to Australia from England. Three months before admission she developed a cough with a small amount of white frothy sputum. The cough became worse and she consulted her local doctor in the country, who ordered an x-ray. The Mantoux test was positive but the gastric washings were negative. The ESR was 40mm. Repeated chest x-rays and tomograms showed widespread mottled opacities. It was considered that most of the lower lobe was solid and that there was infiltration in the upper lobe. A pneumonectomy was performed during which a frozen section was performed. She recovered satisfactorily and was discharged home.

The specimen consists of the resected left lung. Very little normal lung tissue is left. There are widespread confluent nodules of pale solid tissue throughout the lower lobe, with areas of necrosis in the basal region (palest areas). Similar nodules are also present in the upper lobe but they are smaller and more discrete. Occasional nodules are also visible beneath the surface of the pleura.

Diagnosis and comment: The features suggest a pneumonic process, but the appearances are not quite typical. Histology reportedly revealed this to be an adenocarcinoma. It thus probably represents a bronchioloalveolar carcinoma, a type of adenocarcinoma of the lung, which can be multifocal in origin.

CASE 11216

The patient was a boy aged 16 who died in 1957 during a major epidemic of influenza. He had been well until 5 days before admission when he contracted the 'flu'. He had a cough that was productive of a small amount of blood-stained sputum but no chest pain. No treatment was given until the day before admission, when some tablets of sulphanilamide were given. His condition rapidly deteriorated and he was admitted to hospital with a fever of 103°F (39.4°C) and respiratory distress with signs of consolidation in the right lower lung field. Chest x-ray on admission showed mottled opacities throughout most of the right lung and in the left midzone. In hospital he was treated with penicillin and streptomycin and improved slightly, but died suddenly on the 4th hospital day.

The specimen consists of the right lung. There is little normal lung tissue present. The lung appears patchily consolidated with scattered areas of cavitating necrosis. Ante-mortem thrombi are present in some vessels. The overlying pleura shows very little reaction, except for one small patch of acute pleurisy over the apical segment of the lower lobe.

Diagnosis: Bronchopneumonia with multiple abscess formation

Comment: This case represents a well-known complication of influenza: staphylococcal pneumonia. The viral/influenzal infection damages the cilia, impairing mucociliary clearance, predisposing to bacterial infection.

CASE 11274

The patient was a man aged 19, a known diabetic since the age of 2. Seventeen days before admission he developed viral influenza during an epidemic. This responded to bed rest but he relapsed a week later, and his condition deteriorated during the next 10 days. A systolic murmur and a temperature of 105°F (40.6°C) were found on admission and blood culture grew a coagulase positive staphylococcus. On the second hospital day he became irrational and a rash appeared on the skin. Massive doses of steroids were given but lung signs became more obvious and his BP fell to 95/70. Tracheostomy was performed without avail. He died on the 7th hospital day. At post-mortem acute bacterial endocarditis was found on the posterior leaflet of the mitral valve and there were petechial haemorrhages in many organs including the brain.

The specimen consists of a portion of the right lung showing many blotchy areas of haemorrhagic consolidation.

Diagnosis: Post-influenzal staphylococcal pneumonia

CASE 11369

No clinical information is available.

The specimen consists of a resected pulmonary lobe. A pale fleshy mass measuring 2 x 1cm with a uniform pale brown cut surface blocks a major bronchus. There is a small focus where the tumour appears connected to the bronchial wall. Distal to this the bronchi are markedly dilated, but there is little evidence of intrabronchial or surrounding infection. Inspissated mucus is seen in places within the dilated bronchi on the reverse of the specimen.

Diagnosis: Bronchiectasis from bronchial obstruction caused by an intrabronchial tumour

Comment: This is a difficult case. The tumour is obviously not a typical lung carcinoma. There are a number of tumours that may have a predominantly intrabronchial component. These include central carcinoids and a variety of benign and malignant tumours that arise from the bronchial mucus glands. Extension into adjacent lung parenchyma may also occur. These often well-circumscribed tumours were once termed 'bronchial adenomas'. Presentation may result from infection secondary to bronchial obstruction or localised bronchiectasis caused by the slow growing tumours. Histology would be required for definite diagnosis. Carcinoids are essentially well-differentiated tumours of neuroendocrine differentiation (small cell undifferentiated carcinomas are poorly differentiated neuroendocrine carcinomas) showing features of Kulchitsky type neuroendocrine cells seen in the normal bronchial mucosa. There are a variety of types of carcinoid in the lung including central, peripheral and atypical.

CASE 11843

The patient was a woman aged 23 who developed symptoms of pneumonia 10 days before admission. She was treated with antibiotics but did not improve. A pleural effusion developed at the right base, with x-ray evidence of underlying consolidation. The haemoglobin was 108g/L (normal range 115-165 g/L) and there was a leucocytosis of 20.6 x 10^9/L (4-12 x 10^9/L) with 78% polymorphs. The pleural effusion persisted despite tapping. Some time later the basal segments of the lung were resected and an abnormal vessel supplying this region was found at operation.

The specimen of lung shows many cavities varying in size up to about 2-3cm with thin fibrous capsules and containing inspissated mucoid material. One of the cavities contains some recent haemorrhage. The surrounding lung tissue is essentially normal.

Diagnosis: Intralobar sequestration

Comment: This is a difficult specimen that undergraduate students would not be expected to diagnose. Intralobar sequestration is a congenital condition where lobes or segments of lung are not connected to the normal bronchopulmonary tree. The blood supply also comes direct from the aorta or its branches rather than from the pulmonary arteries. The main problems that result from this condition are recurrent localised infection or bronchiectasis.

CASE 11948
This is the lung from an infant whose placenta separated from the uterus prematurely.
The specimen consists of the left lung of a baby with many acute haemorrhages 1-3mm in diameter scattered over the pleural surface.
Diagnosis: Asphyxial petechial haemorrhages
Comment: Petechial haemorrhages are tiny pinpoint haemorrhages that are not highly specific findings. They represent haemorrhage from small vessels from either damage to their walls (e.g. in vasculitis) or from defective or deficient platelet function. Such petechial haemorrhages are often the only abnormal finding at post-mortem in infants dying of sudden infant death syndrome (SIDS).

CASE 12293
The patient was a man aged 31 who had presented with repeated attacks of maxillary sinusitis, for which he underwent an operation 7 months earlier. His convalescence was unsatisfactory; he lost weight after the operation and had recurrent attacks of otitis media. Five months later, he was found to have crusting in the left side of the nose, severe bilateral conduction deafness and trismus. There were numerous opacities in the chest on X-ray, some of which showed cavitation. A month later he was admitted to the RAH with haemoptysis and chest pain accentuated by coughing and deep breathing. His BP was 130/80 and there were small tender red nodules in the subcutaneous tissue of both legs. The ESR varied between 110 and 124, there was persistent intermittent fever and haematuria supervened with a rapidly rising creatinine. Leucocytes numbered 13 x 10^9/L. Terminally he developed left iridocyclitis.
The specimen consists of both lungs and the trachea viewed from the front. At the right apex is a large spherical cavity 8cm in diameter with a thick fibrous wall. Shaggy exudate adheres to the wall of the cavity which contains a spheroidal piece of slough measuring 3cm in maximum dimension.
The lower lobe of the left lung shows a similar large cavity containing necrotic slough. A smaller cavity lies above the main cavity and there is a patch of consolidation in the angle between these two cavities on the medial side. There is overlying fibrous pleural reaction with remnants of adhesions. Areas of necrosis are also present at the right base and left apex.
The trachea is congested and contains purulent exudate on its mucosal aspect.
Diagnosis and comment: This specimen contains several cavitating lesions. The differential diagnosis includes tuberculosis and lung abscesses. In TB one would expect one large cavitating lesion, typically in the apex, rather than two or more. Aspergilloma in pre-existing lung cavities is another scenario but one still has to find a cause for the cavities. Malignancy is very unlikely as there are 2 cavitating lesions and the margins of the lesions lack any definite evidence of neoplastic tissue. The final diagnosis requires histology, but the history does give some clues: before developing his chest signs he appears to have had some upper respiratory tract signs (sinusitis, crusting in the left side of the nose), his later course was complicated by haematuria and renal failure and his ESR was markedly elevated. This is an example of Wegener's granulomatosis, an inflammatory condition characterised by necrotising granulomatous vasculitis of small to medium sized vessels, most prominent in the upper and lower respiratory tracts where there is associated acute necrotising granulomatous inflammation, and renal disease with vasculitis and crescentic glomerulitis. Histology in this case showed necrotic slough surrounded by chronic granulomatous inflammation with lymphocytes, plasma cells, macrophages and occasional giant cells. Lesions elsewhere in the body showed a similar appearance.

CASE 12623
The patient was a man aged 52 who had been losing weight for a year, and for the past 3 weeks he had a severe cough, malaise and marked anorexia. Chest x-ray showed gross scattered opacities throughout both lung fields. Acid-fast bacilli were present in the sputum. He died 5 weeks after admission.
The specimen consists of both lungs, the trachea and main bronchi. Throughout both lungs are numerous scattered solid coalescing areas of caseous necrosis. There is a large cavity 5x3mm, filled with caseous

exudate in the apical segment of left lower lobe. Cavitation is commencing within a lesion in the right upper lobe.
Diagnosis: Cavitating pulmonary tuberculosis with tuberculous bronchopneumonia
Comment: This bronchopneumonic pattern of infection may complicate either primary or secondary TB, and results from dissemination of infection through the airways. Clinical deterioration is rapid and the condition is known as “galloping consumption”.

CASE 12805
The patient was a man aged 56 who had had a myocardial infarct and who died from Wegener's granulomatosis.
The specimen consists of a portion of lung with a 20mm round, white lesion which has a cartilaginous appearance and which is sharply demarcated from the surrounding lung. There is no haemorrhage or necrosis.
Diagnosis: Pulmonary hamartoma
Comment: This specimen is obviously not of Wegener’s granulomatosis. A hamartoma is a benign growth of normal mature tissue components but in abnormal proportions and/or arrangements. In the lung, cartilage usually predominates but the lesion may also contain other components such as respiratory epithelium and fibrous tissue.

CASE 12940
The patient was a middle-aged woman who had a 5 year history of a continuously sore throat. Laryngoscopy and biopsy showed a well-differentiated squamous cell carcinoma in the left pyriform fossa. Deep x-ray treatment was given. The lesion recurred but resolved with further radiotherapy. Six months later the tumour recurred again and pharyngo-laryngectomy was performed.
The specimen consists of the larynx and the upper few cm of the hypopharynx and trachea. On the left lateral wall of the hypopharynx in the piriform fossa there is a white irregular plaque 25 x 10mm.
Diagnosis: Carcinoma of the hypopharynx

CASE 13619
The patient was a man aged 80 with a history of carcinoma of the prostate. Two days before his admission he began to vomit and became lethargic and disorientated. On examination there were crackles at the base of both lung fields, and a swinging fever of up to 38.3°C. He died 4 days after admission.
The specimen is a slice of left lung in which almost the entire lower lobe is pale and consolidated. The process is sharply limited by the interlobar fissure. The overlying pleura demonstrates a dense fibrinous exudate. Patchy anthracosis is noted.
Diagnosis: Lobar pneumonia

CASE 14734
The patient was a man aged 43.
The specimen is the left half of the larynx, epiglottis and upper trachea cut in the median sagittal plane to disclose a large fungating mass measuring 5.5 x 3cm arising from the posterior wall of the larynx, and growing forward virtually to obliterate the laryngeal cavity. The cut surface is slightly lobulated and pale.
Diagnosis: Carcinoma of the larynx
On the basis of the pathological findings, what symptoms may the patient have experienced during life? Persistent hoarseness is the most common symptom. As the tumour enlarges there may be pain that may be felt in the ear, airway obstruction, dysphagia and skin involvement. Local metastases will cause cervical lymphadenopathy.

CASE 15459
A man aged 54 was admitted with a 2-week history of weakness, breathlessness, a productive cough and pain in the right side of the chest, worse on inspiration. He had a one week history of vomiting and anorexia, with weight loss but no haemoptysis. Examination showed diminished air entry in the right mid-zone with wheezes and crepitations. The ESR was 70mm. Chest x-ray showed widespread opacities. Marked anorexia and vomiting after food continued and he became very breathless. He died after a month in hospital.
The specimen is a section of the right lung. The lung demonstrates diffuse pale speckling with pale tissue forming thick collars around air passages and infiltrating interlobular septae and pleura. Through the back of the pot an enlarged hilar lymph node containing nodules of the same pale tissue, clearly outlined against the "normal" black of the node, is seen. A discoloured brown fibrinous pleural exudate is present, predominantly on the lower lobe.
Diagnosis: Lymphangitis carcinomatosis
Comment: The appearances are those of lymphangitis carcinomatosis. This arises from extensive lymphatic spread in the lungs of either a primary or metastatic tumour. Post mortem examination in this case identified a primary carcinoma of the stomach.

CASE 15698
The patient was a man aged 55 in whom pulmonary tuberculosis was found 8 years before his death. Thereafter he had repeated episodes of chronic bronchitis and asthma and for the last 3 months had been severely breathless. On examination there was marked finger clubbing and minimal chest expansion with central cyanosis. There was ECG evidence of cor pulmonale. The sputum on two occasions was negative for acid-fast bacilli. He died of respiratory failure.
What is cor pulmonale? Cor pulmonale refers to enlargement of the right ventricle arising secondary to pulmonary hypertension. It sometimes leads to right ventricular failure. Pulmonary hypertension may be chronic, arising secondary to chronic obstructive or interstitial lung disease, recurrent pulmonary emboli or abnormalities of the thorax or pulmonary ventilation. Chronic pulmonary hypertension may also be primary (idiopathic). Acute cor pulmonale arises as a result of acute pulmonary thrombo-embolism.
The specimen is a section of right lung. No normal lung tissue is evident. The alveolar air spaces are grossly enlarged, giving the lung a loose, sea-sponge like quality. There is a thin rim of consolidation in the posterior basal segment of the lower lobe.
Diagnosis: Advanced emphysema

CASE 15709
The patient was a man aged 76. He died of carcinoma of the pancreas with secondaries in the liver and peritoneum.
The specimen consists of a piece of the anterior chest wall. On the front of the pot, one can see the parietal pleura, on which there are large plaques of thick fibrous tissue, as well as smaller 1-2mm nodules.
Diagnosis: Fibrous pleural plaques.
Comment: These are benign. Many cases arise as a result of asbestos exposure.

CASE 15860
The patient was an alcoholic woman aged 54 who had been treated previously for peripheral neuropathy. Four months before death she had developed enlargement of the right cervical and axillary lymph nodes following an influenza vaccination. Shortly thereafter a sterile "abscess" was drained in the right cervical region. Biopsy showed a non-specific chronic inflammatory reaction. Because an old calcified tuberculous focus was found in the right upper zone on CXR, it had been suspected that this cervical lesion might be tuberculous but no tubercle bacilli were ever grown. She continued to lose weight and was admitted to the tuberculosis ward a month later. Streptomycin was given without effect. The cervical lesion was drained again and a moderate swinging fever persisted thereafter. A small lesion was then found by x-ray in the

head of the right first rib. She then developed peripheral circulatory failure with a rising creatinine and she died 2 months later from what was thought to be alcoholic cardiomyopathy.

What do you understand by the term alcoholic cardiomyopathy?

Cardiomyopathy is a heart disease resulting from a primary abnormality of the myocardium. There are three main forms: restrictive, hypertrophic and dilated. Alcoholic cardiomyopathy is a form of dilated cardiomyopathy, thought to be the result of a direct toxic effect of alcohol or its metabolites on the heart muscle. In these cases the patient presents with sometimes rapidly progressive congestive cardiac failure and the heart is heavy with dilatation of all 4 chambers.

The specimen consists of the left lung sectioned to show a cavitating lesion in the lower lobe. The cavity measures approximately 4cm in diameter, is lined by necrotic tissue and has no obvious capsule. Extending focally around the edges of the cavity is a thin rim of abnormal white tissue, relatively well demarcated from the adjacent lung. A 3cm diameter mass of similar tissue abuts the cavity above. The lung also shows anthracosis.

Diagnosis: Primary carcinoma of the lung with cavitation

Comment: Post-mortem showed gross invasion of mediastinal lymph nodes and massive involvement of lymph nodes on both sides of the neck. Histology showed well differentiated squamous cell carcinoma.

CASE 16024

The patient was a hypertensive woman aged 57 who was admitted after a sudden left hemiplegia involving the left face, arm and leg, with associated left homonymous hemianopia. She died suddenly after a few days in hospital.

The specimen shows the left lung with the pulmonary artery opened to disclose a large variegated thrombo-embolus. The pulmonary artery appears normal with no evidence of atherosclerosis to suggest chronic pulmonary hypertension. The cut surface of the lung shows congestion with early infarction in most of the lower lobe, and ante-mortem thrombo-embolus is visible in medium-sized pulmonary arteries throughout the lung.

Diagnosis: Pulmonary embolism and infarction

What term is given to the patient's presentation and what relationship does the patient's presentation have to the pathology demonstrated? The patient has presented with a 'stroke', probably due to a cerebral infarct. The stroke lead to the patient being bed bound and at risk of DVT, the source of the pulmonary embolism.

CASE 16066

The patient was a woman aged 52 who smoked 60 cigarettes per day. She had always had a smoker's cough that had worsened 4 months before admission and was productive of brown sputum. She had also developed loss of appetite, loss of weight and general weakness. Bronchoscopy and biopsy revealed a bronchogenic carcinoma and radiotherapy was given with minimal effect. Three weeks later her breathlessness increased with signs of right-sided consolidation with effusion, together with hepatomegaly and clubbing of the fingers. One thousand mls of blood-stained fluid were aspirated from the right pleural cavity and malignant cells were seen. She died shortly thereafter.

The specimen is of right lung. Abnormal pale tissue infiltrates through lymphatic channels, outlining the pulmonary lobules and there are also thick collars of pale tissue around medium-sized and small air passages and vessels throughout the lung. The pleura appears grossly thickened by the same pale tissue, with patchy overlying fibrinous reaction.

Diagnosis: Lymphangitis carcinomatosis

Comment: Lymphangitis carcinomatosis results from diffuse permeation of pulmonary lymphatics that run alongside vessels and bronchi, by malignant tumour, either primary or secondary.

CASE 16086
The patient was a man aged 37, whose mother had died of tuberculosis when he was 6 years old. At the age of 18 he had been rejected for military service because of tuberculosis, but failed to return for follow-up treatment. Since then he had apparently been well until he was admitted to hospital with epistaxis after exercise. While in hospital haemoptysis occurred and there was a high swinging fever. X-ray then showed disseminated lung lesions and acid-fast bacilli were plentiful in the sputum. He was treated intensively but he died after 2 weeks in hospital.
The specimen is of the sectioned right lung. There is a large cavity measuring 3 x 3 x 2cm in the anterior subapical region of the upper lobe. The wall of the cavity is irregular and lined by caseous exudate. Patchy consolidation in a pattern of bronchopneumonia is present throughout all lobes. Ante-mortem thrombus is present in medium-sized vessels in the lower lobe.
Diagnosis: Cavitating pulmonary tuberculosis with tuberculous bronchopneumonia
Comment: This bronchopneumonic pattern of infection may complicate either primary or secondary TB, and results from dissemination of infection through the airways. Clinical deterioration is rapid and the condition is known as “galloping consumption”.

CASE 16205
The patient was a girl aged 18. Her illness began two years previously with severe backache and bilateral sciatica. Five months later a lymph node on the left side of the neck became enlarged and biopsy showed malignant lymphoma. The sciatica persisted and myelography showed a complete spinal block. At laminectomy a large extradural deposit of lymphoma was removed from the area T11-L1. The body of L1 vertebra was infiltrated. In spite of this extensive spinal disease there was very little neurological deficiency. After the operation she improved for a time but then developed respiratory signs and was readmitted. X-ray showed enlargement of mediastinal nodes. Treatment was then given but she deteriorated steadily and soon died.
The specimen is of the lungs sectioned to show massive enlargement of lymph nodes in the mediastinum and hilum of the lungs. The nodes are pale and fleshy. In addition there are isolated intrapulmonary deposits in the right lung and there is massive direct infiltration of the left lower lobe and infiltration of the visceral pleura over the entire anterior surface of the left lung (seen on the reverse of the specimen).
Diagnosis: Malignant lymphoma

CASE 16294
The patient was a man aged 49. When aged 23 pulmonary tuberculosis was treated by gold injections and subsequent left-sided artificial pneumothorax. Thereafter he remained well until he became hypertensive. He died from a sudden hemiplegia affecting the left side.
The specimen is of the right lung sectioned to show a well-demarcated, white 20mm lesion in the apex with a thin capsule. In the mid-zone of the lung 2.5cm beneath the pleura is a small (1 mm) calcified focus surrounded by stellate fibrous tissue.
Diagnosis: Inactive secondary tuberculosis
Comment: The white material within the apical lesion probably represents calcified caseous necrosis.
What pathology is likely to be seen in the brain? The patient may well have had a haemorrhage in the region of the right internal capsule as a result of hypertensive damage to arterioles. Alternatively he may have had blockage of the right middle cerebral artery by atherosclerosis and thrombosis or embolism with subsequent infarction of its territory.

CASE 16322
No clinical information is available for this adult woman.
The specimen consists of a portion of lung showing a peripheral subpleural rounded caseous encapsulated lesion, 30mm in diameter and showing central cavitation. The overlying pleura is fibrotic. There is a second separate nodule nearly 10mm in diameter near the hilum. The remainder of the lung appears normal.
Diagnosis: Tuberculosis
Comment: The position of this lesion suggests primary tuberculosis. Histology showed caseous tuberculous necrosis with giant cells and epithelioid cells.

CASE 16380
The patient was a man aged 65 with a 6 month history of pain in the right hip which moved to the shoulders 3 months later. He then developed a left sided chest infection accompanied by pain on coughing. Two months later he was admitted to hospital with breathlessness, weight loss, chronic cough and left pleuritic pain. There was early clubbing of the fingers and a left pleural effusion. X-rays showed a large opacity in the left midzone and metastatic destruction of the right scapula and ilium. The sputum contained malignant cells. Two litres of bloodstained fluid containing malignant cells were aspirated from the left pleural cavity. He died after 5 weeks in hospital.
The specimen consists of the left lung and parietal pleura. There is a large irregular pale mass in the upper lobe, measuring 13 x 8cm. It has well demarcated but not encapsulated margins which are pushing into the surrounding lung tissue and there is necrosis but no haemorrhage. A large emphysematous bulla is present at the apex above the tumour. Both the visceral and parietal layers of the pleura are infiltrated by pale tumour, with effacement of much of the pleural cavity. Inferiorly the pleural cavity contains organising exudate. The lower lobe is somewhat collapsed.
Diagnosis: Primary lung carcinoma with extensive pleural spread
Comment: Histology reportedly showed adenocarcinoma.

CASE 16653
The patient was a man aged 77 who had undergone a retropubic prostatectomy 7 weeks earlier. Shortly after the operation he developed what was thought to be right-sided pneumonia, which apparently resolved with erythromycin treatment. He was discharged to a convalescent home but was readmitted a few days later with drowsiness and faecal and urinary incontinence. He died from acute pulmonary oedema 3 days later. Evidence of ischaemic heart disease was found at autopsy.
The specimen is the lower lobe of the right lung sectioned to a show 6 x 1.5cm subpleural pale lesion with a hyperaemic border present in the posterior basal segment. Ante-mortem thrombo-embolus can be seen on the reverse of the specimen blocking the major artery to the lower lobe.
Diagnosis: Pulmonary embolus with resolving pulmonary infarct
What are the risk factors for developing this condition?
The risk factors for developing pulmonary embolism are those of DVT including:
- Slowing of blood flow: immobilisation, congestive cardiac failure
- Hypercoagulability: cancer, surgical, OCP, peri-partum state, genetic
- Endothelial damage: trauma, burns

CASE 17106
The patient was a man aged 58 whose voice had been hoarse for 2 years. Two months before admission he had an attack of pneumonia and he was referred to the chest clinic. Because x-ray suggested tuberculosis he was admitted to a sanatorium although the sputum was negative for tubercle bacilli. He was then referred to an ENT surgeon because of the hoarseness and a carcinoma of the larynx was found. A laryngectomy was performed. The post-operative course was at first satisfactory but he then developed a

left-sided chest infection which progressively worsened in spite of intense antibiotic treatment. Finally there was acute renal failure together with a purpuric rash.
The specimen consists of the left lung sectioned to show a large unilocular apical cavity 8cm in diameter. Ragged necrotic slough lines its wall. There is no definite capsule and there is a wide zone of surrounding consolidation that extends into the lower lobe also. Patchy anthracosis is noted.
Diagnosis: Pneumonia with lung abscess
Comment: The absence of a capsule suggests that the abscess is quite recent.
What may have caused the patient's acute renal failure and purpuric rash? These may have arisen as a result of disseminated intravascular coagulation arising from septic shock.

CASE 17156
No clinical information is available for this specimen.
The specimen consists of the larynx. There is an irregular nodular papillary mass measuring 1.5 x 1cm on the right vocal cord.
Diagnosis: Carcinoma of the larynx
On the basis of the pathological findings, what symptoms may the patient have experienced during life? Persistent hoarseness is the most common symptom.
Larger tumours may cause pain that may be felt in the ear, airway obstruction, dysphagia and skin involvement. Local metastases will cause cervical lymphadenopathy.

CASE 17485
The patient was a woman aged 26 who died from a brain abscess from which a microaerophilic streptococcus was grown. She was unconscious for many days and was maintained on a respirator. A tracheostomy was also required.
The specimen shows a slice of the left lung in which there are many scattered areas of pale consolidation, most evident in the apical segment of the lower lobe and in the adjacent region of the upper lobe. The lung is otherwise normal.
Diagnosis: Bronchopneumonia
What are the risk factors for developing this condition that are present in this case? Debilitation by a severe illness, unconsciousness (loss of protection of airway) and being on a respirator.

CASE 17909
The patient was a man aged 73. Two years previously he had a stroke from which he made a good recovery. Six hours before his last admission he was found semiconscious in the garden. He had vomited. He quickly became more deeply unconscious and was admitted comatose. The right pupil was fixed and dilated and the left pupil was contracted. Neither reacted to light. Both plantar reflexes were extensor. He remained unconscious but could move the right side in response to painful stimuli. The left side remained flaccid. He continued in this state for 2 weeks, but during the last week there was a high fluctuating fever up to 104°F (40°C).
The specimen consists of a portion of lung sectioned to show two cavities 20 - 25mm in diameter that are lined by exudate and necrotic lung tissue. Elsewhere in the lung there are patchy grey areas of consolidation. The overlying pleura shows an acute fibrinous reaction (see back of pot)
Diagnosis: Bronchopneumonia with lung abscesses
Comment: The patient has suffered an infarction in the brainstem. (The autopsy only reports recent softening of the right peduncle). The comatose patient is susceptible to pneumonia that may result from aspiration.

CASE 18386
The patient was a man aged 50 who had a carcinoma of the larynx treated by radiotherapy. He became depressed and committed suicide by an overdose of Nembutal. At post-mortem there was a large abscess in the left lung with an associated empyema containing 250 ml of thick pus.
The specimen is of the larynx opened from behind to show a large, pale, necrotic broad based lesion in the upper larynx anteriorly that has destroyed the epiglottis and extends onto the right aryepiglottic fold.
Diagnosis: Carcinoma of the upper larynx/epiglottis

CASE 18892
The patient was a woman aged 72. A large haemangio-endothelioma had been excised from the scalp a few months before death. She presented with right pleural effusion from which bloodstained fluid was aspirated. X-ray showed scattered tumours in the lungs that were thought to be secondary deposits from a primary mucoid carcinoma of a breast, which had been removed 5 years previously with subsequent radiotherapy. She was treated with stilboestrol and cyclophosphamide but steadily deteriorated and died.
The specimen is a portion of right lung sectioned to show numerous rounded haemorrhagic and necrotic lesions varying in size up to 4cm in diameter. Many of these lie beneath the pleura and are visible on the reverse of the specimen. They are well demarcated but have no definite capsule. An area of subpleural fibrosis is noted at the apex of the upper lobe and organising exudate is noted in the pleural cavity inferiorly.
Diagnosis: Metastatic tumour
Comment: Histology revealed the lesions to be metastatic haemangio-endothelioma from the scalp primary.

CASE 19571
The patient was a man aged 46 who had had malignant lymphoma for 2 years treated with a variety of cytotoxic drugs with reasonable success. On his last admission he was anaemic with a low platelet count. Chest x-ray showed mottling of both lung fields. He had signs and symptoms of small bowel obstruction and a laparotomy was necessary to divide adhesions. A week after the operation he became breathless and orthopnoeic and died suddenly two days later.
The specimen is of the right lung. The cut surface shows diffuse involvement by ill-defined coalescing nodules of pale solid tissue, giving an appearance reminiscent of consolidation. The pleural surface reveals numerous small subpleural nodules.
Diagnosis: Malignant infiltration in lymphoma
Comment: The macroscopic differential is between a pneumonic process with consolidation, metastases, or lymphangitis carcinomatosis, but the picture is not typical of any of these. In view of the history it seems most likely to be diffuse lymphomatous invasion. Histology confirmed the presence of malignant lymphoma.
What are adhesions, what is their pathogenesis and what is their significance? Adhesions are fine bands of fibrous tissue that extend between loops of bowel. They develop following organisation of fibrinous exudate from previous peritoneal inflammation, often developing as a result of previous abdominal surgery. They are significant as they are one of the commonest causes of bowel obstruction. Loops of bowel can become twisted around them leading to strangulation, obstruction and ultimately perforation if not treated.

CASE 19618
The patient was a woman aged 76. Seventeen years previously she had been diagnosed with a low grade papillary carcinoma of the bladder which frequently recurred, requiring treatment. Five years later partial cystectomy was performed. A year before her death a further partial cystectomy was carried out but the tumour continued to grow. Eventually, a hard mass 8-10cm in diameter could be felt filling the pelvis and she developed leg oedema.
The specimen consists of a lung lobe showing in its centre a round, well circumscribed, well demarcated, pale lesion 40mm in diameter, with focal haemorrhage and necrosis. The lung is otherwise essentially normal.

Diagnosis: Metastatic carcinoma
Comment: Although there is only one lesion, its well-demarcated margins in addition to the clinical history suggest it is most likely to be a metastasis. This was confirmed on histology. The appearances could also represent a primary malignancy.
What types of carcinoma arise in the bladder? Most are transitional cell carcinomas. Others are usually squamous cell carcinoma or adenocarcinoma.

CASE 19942
The patient was an Aboriginal boy who had presented at the Alice Springs hospital 6 weeks previously with severe anaemia and pyrexia of unknown origin. He was pale and was bleeding from the gums. The haemoglobin was 25g/L (normal 130-180). Bone marrow biopsy showed an increase in myeloid precursors, myeloid/erythroid ratio of 1:2 with normoblastic erythropoiesis and erythroid hyperplasia. He was transfused and was given iron and massive doses of folic acid and vitamin B12. When he did not respond he was transferred to the RAH. On admission there was severe anaemia with a haemoglobin of 28g/L, leucocytes 3.4 x 10^9/L (normal 4-12 x 10^9/L), platelets 10 x 10^9/L (normal 150-400 x 10^9/L). Despite intensive treatment he did not improve, he bruised easily and there were numerous haematemeses, epistaxes, melaenas and episodes of haematuria. A month before his death he became jaundiced and there were signs of consolidation of the right middle and lower lobes. Several generalised convulsions occurred just before his death. Acid-fast bacilli were not present.
The specimen consists of the right lung sectioned to show an area of yellow consolidation 25mm in diameter in the centre of the upper lobe. This area has an irregular border and there is some central necrosis. Small patches of pale yellow consolidation, 1 to 4mm in diameter are present throughout the remainder of the lung and there is patchy congestion.
Diagnosis: Bronchopneumonia and focal early abscess formation
Comment: The clinical information given above suggests that the patient has an acute leukaemia. In view of his immune compromised status it is not surprising to learn that histology and culture revealed masses of cryptococci and aspergillus organisms as the cause of the pulmonary pathology. Each can also spread via the blood to the brain and cause lesions there, causing convulsions. The macroscopic features in the lung are not typical of a normal bacterial bronchopneumonia. The macroscopic differential is miliary TB but the clinical history is not suggestive of this.

CASE 19979
The patient was a man aged 57 who had complained of shortness of breath for 4 months. Carcinoma of the lung was confirmed by x-ray, pleural biopsy and cytology of the pleural fluid. Before his final admission he had 5 pleural taps, and nitrogen mustard had been instilled into the pleural cavity on one occasion. On admission there were signs of a left sided pleural effusion and there was pitting oedema of the ankles. At post-mortem metastases were present in the scalene nodes and in the abdominal aortic nodes.
The specimen consists of the left lung sectioned to show massive malignant infiltration of the pleura, including along the interlobar fissures, to a maximal thickness of some 6cm. The lung substance is compressed and collapsed. The pleural cavity focally contains thick haemorrhagic fibrinous exudate.
Diagnosis: Extensive pleural spread from carcinoma of the lung
Comment: This picture may be seen with malignant mesothelioma, a very aggressive primary mesothelial malignancy, typically seen following chronic asbestos exposure, or from direct spread or metastases of adenocarcinoma, typically from the lung or breast. No primary malignancy is obvious in the tissue present but one could be present elsewhere. Histology reportedly showed adenocarcinoma.

CASE 20240
The patient was an alcoholic man aged 60 who was admitted with pneumonia. His respiratory function became very depressed and he was transferred to the intensive-care unit, where he was intubated and ventilated. He appeared to be responding satisfactorily but went into peripheral circulatory failure and died after 2.5 weeks. At post-mortem there was a cirrhotic liver with ascites, together with right lung abscesses.
The specimen shows the tongue, pharynx, larynx and upper trachea viewed from behind. There is intense haemorrhagic and purulent inflammation particularly affecting the lower larynx and upper trachea, where dense fibrinosuppurative exudate adheres to a congested mucosa. The surrounding soft tissues appear swollen.
Diagnosis: Purulent laryngo-tracheitis from prolonged intubation

CASE 20642
This woman aged 54 had a total hysterectomy for sarcoma of the uterus 6 months before her death. Postoperatively she was given cyclophosphamide and radiotherapy. On her final admission there were bilateral pleural effusions and x-ray evidence of pulmonary metastases. At post-mortem there were also metastases in the right iliac bone.
The specimen is a portion of right lung. There are numerous round, well-demarcated lesions throughout both lobes, measuring up to 40mm in diameter. Their cut surface is pale and fleshy with areas of necrosis and haemorrhage. There is mild patchy overlying brown coloured fibrinous pleurisy. Tumour focally invades through the pleura.
Diagnosis: Metastatic tumour (primary uterine sarcoma)

CASE 20680
The patient was a woman aged 40. After a pregnancy she was found to have a carcinoma of the left breast, which was resected and a course of radiotherapy was given. Shortly thereafter signs of right-sided pneumonia appeared. These failed to resolve, and her condition gradually deteriorated and she died 4 months after the original operation.
The specimen is of the right lung. There is a single round well-circumscribed grey lesion 60mm in diameter with necrosis in the subapical region. The surrounding lung is compressed and the lesion is well demarcated but not encapsulated. In the remainder of the lung abnormal pale tissue can be seen forming a thick collar around bronchial walls and focally outlining interlobular septa.
Diagnosis: Metastatic carcinoma (primary breast) with lymphangitis carcinomatosis

CASE 20685
This patient was a man who had been exposed to asbestos in a mine at Wittenoom Gorge, Western Australia. Shortly before his death he suffered recurrent spontaneous pneumothoraces. On the last occasion the pneumothorax was complicated by mediastinal and subcutaneous emphysema around the neck, right chest and axilla. He became more breathless and died. Post-mortem was performed in the Coroner's mortuary. The heart weighed 450gm and there was marked dilatation and hypertrophy of the right ventricle. There was gross surgical emphysema of the neck, chest, mediastinum and retroperitoneal tissues.
The specimen is of both lungs and the mediastinum sectioned in the coronal plane and viewed from behind. The lungs show patchy involvement, most marked in the upper lobes, by fibrosis with the formation of large airspaces. There is associated pigmentation. Hilar nodes are enlarged. Fibrous adhesions containing loculated air spaces are present in the pleural cavity particularly on the right. There is no evidence of carcinoma or mesothelioma.
Diagnosis: Pulmonary fibrosis related to asbestos exposure
Comment: This is an example of ‘honeycomb lung’. Large airspaces form in association with pulmonary fibrosis, the appearance resembling honeycomb. Note that the fibrosis is patchy and does not involve the lung uniformly.

What are the causes of pulmonary fibrosis? Pulmonary fibrosis develops in association with certain diseases where there is chronic interstitial inflammation (usual interstitial pneumonia). There are many causes including:

- Connective tissue diseases eg. rheumatoid arthritis, sarcoidosis
- Certain drugs
- Various occupational and environmental dusts e.g. asbestos
- Some cases are idiopathic

What are the complications of pulmonary fibrosis?

- Chronic respiratory failure
- Chronic right heart failure

Why was this patient's right ventricle hypertrophied? As a result of chronic pulmonary hypertension developing secondary to pulmonary fibrosis.

What are the different problems that can arise as a result of asbestos exposure?

The main things are: fibrous pleural plaques, malignant mesothelioma (pleural and peritoneal), lung carcinoma and pulmonary fibrosis.

CASE 20778

The patient was a man aged 50 who was admitted with a history of increasing shortness of breath associated with a productive cough for one month. He died soon after admission.

The specimen of the right lung shows the lower lobe to be almost completely consolidated and pale in colour. There is fibrinous pleurisy overlying the lower and middle lobes and some of the upper lobe.

Diagnosis: Lobar pneumonia

CASE 20813

The patient was a woman aged 57 with a long history of pyelonephritis, uraemia and macrocytic anaemia. Nodules appeared in the anterior abdominal wall and biopsy showed undifferentiated metastatic carcinoma. She died of renal failure.

The specimen consists of a portion of lung with a 3cm cavity peripherally. The wall is necrotic and adjacent lung consolidated. The overlying pleura is slightly fibrotic and puckered. Around the proximal aspect of the bronchus that leads towards this lesion is a subtle pale solid mass, 15mm in diameter.

Diagnosis and comment: The differential diagnosis of the cavity is between abscess, malignancy and tuberculosis. Normally around an abscess one would expect a greater degree of consolidation, however, with cavitating malignancies one would expect more solid tumour tissue in the wall. Histological examination of the cavity wall in this case reportedly showed adenocarcinoma but there is no comment on the peribronchial lesion. The tumour around the bronchus could represent lymph node metastases. However, macroscopically the lesion around the bronchus could be a primary with the cavity being an abscess resulting from infection caused by bronchial obstruction. As you can see, further histological examination would be very useful in sorting this out.

CASE 21280

This 58-year old man had had two episodes of pneumonia in the previous 4 years, but otherwise had been well until two months before his last admission when he noticed tiredness, weakness and a cough. The cough was mostly non-productive but occasionally the sputum was blood stained. He also complained of right pleuritic pain and severe loss of weight. During this time he was treated unsuccessfully for pneumonia. He had previously smoked 20 cigarettes per week.

On examination there were signs at both lung bases, he had a raised white cell count and the ESR was 52. Chest x-ray showed dense widespread opacity involving most of the right lung and the lower half of the left lung. The patient died on the 5th day.

The specimen is of the right lung sectioned to show widespread small pale solid nodules varying in size from 1 - 3mm. The nodules are larger and becoming confluent in the middle and lower lobes. Lymphatic

permeation with nodule formation in places is visible beneath the pleura, particularly of the lower lobe (see back of pot). A hilar node is enlarged and shows pale tissue amongst the "normal" black.
Diagnosis and comment: Macroscopically, the differential diagnosis here includes miliary TB, bronchopneumonia (though not typical), metastases (again not typical) and lymphangitis carcinomatosis. Histologically, however, this was reported to show intra-alveolar adenocarcinoma lining the alveolar walls and freely infiltrating peribronchial, perivascular and subpleural lymphatics. The diagnosis thus appears to be bronchioloalveolar carcinoma, with lymphangitis carcinomatosis. Bronchioloalveolar carcinoma is a subtype of primary adenocarcinoma of the lung that can be multifocal in origin. There are 2 subtypes, in one the cells show features of Goblet cells, in the other they show features of Clara cells and/or type 2 pneumocytes.

CASE 21348
The patient was a man aged 60 who was admitted with a history of dysphagia and epigastric pain of 5 weeks duration. A hard irregular mass extending across the upper abdomen was palpable and was thought to be liver. Laparotomy and biopsy were performed. He gradually developed congestive cardiac failure and died 4 weeks after the operation.
The specimen is of the lungs and air passages seen from behind. A mass of pale fleshy tissue is seen arising from and invading around the right main and upper and lower lobe bronchi. The bronchi are narrowed and there is some dilatation of lower and upper lobe bronchi distal to the obstruction. The lesion extends directly to involve lymph nodes beneath the bifurcation of the trachea, around the left main bronchus and massively alongside the right side of the trachea. Tumour can be seen on the reverse of the specimen bulging into the wall of the superior vena cava.
Diagnosis: Primary lung carcinoma with bronchiectasis secondary to obstruction
Comment: Histology of the tumour in the liver revealed metastatic oat-cell carcinoma (small cell undifferentiated carcinoma). At post-mortem there was gross neoplastic involvement of mediastinal nodes, liver and retroperitoneal nodes.

CASE 22090
This patient was a man aged 57 at his death. There was a history of pulmonary tuberculosis as a child and he had been admitted to the RAH 18 years previously with a tuberculous lesion in the left hip. This hip disease apparently recurred 6 years later. For 5 months before his final admission he had been weak and tired and acid-fast bacilli were present in the sputum. He died the day after admission.
The specimen is of the left lung sectioned to show a large bilocular cavity measuring 8cm in diameter in the subapical region of the upper lobe. There is a further cavity 3cm in diameter in the anterior apical region. Shaggy necrotic exudate adheres to their walls. Most of the remaining lung tissue in the upper and lower lobes is extensively consolidated with patchy necrosis and early cavitation in places. The pleura is fibrotically thickened and demonstrates fibrinous exudate inferiorly.
Diagnosis: Cavitating pulmonary tuberculosis with tuberculous bronchopneumonia
Comment: This bronchopneumonic pattern of infection may complicate either primary or secondary TB, and results from dissemination of infection through the airways. Clinical deterioration is rapid and the condition is known as "galloping consumption".

CASE 22102
This patient was a man aged 64 who had been hypertensive since the age of 40. Pulmonary tuberculosis had developed at age 30 and was treated with artificial pneumothorax for 7 years. He died from massive pulmonary embolism.
The specimen is of the left lung and pleural cavity. The pleural cavity focally is expanded and impinges on the lobes from the apex to the base. It has a thick fibrous wall and contains brown-yellow caseous exudate. The pleura elsewhere shows filmy fibrous adhesions. Within the upper lobe are a few tiny white calcified nodules, less than 1mm in diameter.

Diagnosis: Encysted tuberculous empyema
Comment: This is an example of empyema - a collection of infectious material within the pleural cavity. The thick fibrous wall indicates its chronic nature. This in combination with the history and the presence of white calcified nodules in the lung parenchyma (suggesting old TB infection) lead to the diagnosis of a tuberculous cause.

CASE 22204
The patient was a woman aged 56 on whom a dilatation and curettage had been performed for carcinoma of the uterus. After the operation she developed deep vein thrombosis and there were repeated episodes of pulmonary embolism. She was heparinised and eventually a hysterectomy was performed, but she collapsed after the operation and died next day from a cardiac arrest. At post-mortem secondary deposits were present in aortic lymph nodes and there were ante-mortem thrombi in the right femoral and common iliac veins and in many smaller veins in the pelvis. The liver showed chronic passive venous congestion.
The specimen is of the left lung showing 4 lesions within the lower lobe. The largest is 4cm in diameter, pleurally based and pale in colour. The others are pale or red-brown in colour. They are all well-demarcated from the surrounding lung and are surrounded by a rim of fibrosis. The surrounding lung demonstrates patchy yellow discolouration. The surrounding pleura is fibrous and thickened and the pleural cavity focally contains haemorrhagic exudate. Ante-mortem thrombo-embolus is visible in small vessels in the lung substance, particularly in the upper lobe.
Diagnosis: Pulmonary embolus with healing infarcts
Comment: The clinical history does not give a clear indication of the time frame between the initial episode of pulmonary embolism and death. However it was probably at least 1-2 weeks from the degree of fibrosis present. The yellowish discolouration of the pulmonary parenchyma may be from haemosiderin formation, resulting from the phagocytosis of red blood cells and alteration of haemoglobin by macrophages following the haemorrhage associated with pulmonary embolism and infarction.

CASE 22392
The patient was a woman aged 53 who developed what was apparently rheumatoid arthritis, with pain and swelling of interphalangeal joints. While in hospital she developed a right spastic hemiparesis and investigation showed a mass in the left lung. She deteriorated rapidly and died after 3 weeks.
The specimen is of the left lung. The main bronchus is surrounded and narrowed by a mass of pale yellow-grey tissue 6cm in length. The back of the pot shows the tumour extending directly into the substance of the upper lobe of the lung as a lobular mass measuring 10 x 6cm. Some of the lobulations contain carbon pigment and probably represent lymph nodes that have been directly invaded by the tumour.
Diagnosis: Primary lung carcinoma.
Comment: At post-mortem a large metastasis 4cm in diameter was present in the left parietal lobe, there was a further small metastasis 1cm in diameter in the head of the right caudate nucleus and two large necrotic metastases were present in the left cerebellar hemisphere. Histology showed oat-cell carcinoma (small cell undifferentiated carcinoma). The nature of the interphalangeal joint swelling is a bit harder to relate to the tumour: hypertrophic pulmonary osteoarthropathy - a paraneoplastic phenomenon - typically causes pain of the wrists.

CASE 22499
This patient was a man aged 53. Six months previously he had begun to experience dysphagia together with a husky voice and he had started to lose weight. Oesophagoscopy and biopsy disclosed a poorly differentiated post-cricoid cell carcinoma. No active treatment was undertaken because the patient had had massive previous irradiation to the face and neck for recurrent squamous cell carcinoma of the face and lower lip. The dysphagia progressed so that gastrostomy was considered, but he died before operation was performed.

The specimen consists of the larynx, trachea, hypopharynx and upper oesophagus opened to disclose a large pale somewhat papillary tumour 6cm in length on the posterior and lateral surfaces of the hypopharynx. The reverse of the specimen shows that the tumour has not penetrated into the larynx or trachea. The right lobe of the thyroid contains an old fibrotic encapsulated nodule.
Diagnosis: Carcinoma of the hypopharynx

CASE 22565
The patient was a woman aged 67 who was admitted to hospital with a large squamous cell carcinoma of the lower lip that had reportedly been present for 12 years. She was malnourished because of difficulties with feeding. Oral methotrexate was given with a good initial response and she was discharged. She was readmitted 5 months later with fever and rapid pulse and died after 4 weeks in hospital. At post-mortem there was a large carcinomatous ulcer of the lower lip infiltrating widely in the skin of the chin, the right half of the mandible, the mouth and all layers of the right cheek as far as the hard palate. There was thickening of the meninges over the brain stem, and histology showed diffuse squamous carcinomatous meningeal infiltration in the subarachnoid space.
The specimen is of the right lung sectioned to show widely scattered small patches of pale yellow consolidation throughout both lung fields. Scattered thrombi, probably ante-mortem thrombo-emboli, are present in vessels.
Diagnosis: Bronchopneumonia

CASE 22587
This 64-year old woman had a 6 year history of progressive dyspnoea worsening with frequent attacks of bronchitis until she became severely disabled. On examination her BP was 110/70, there was central cyanosis with finger clubbing and the heart was slightly enlarged. Crackles were present at both lung bases. There was a loud first heart sound and a right ventricular heave but no diastolic murmur. She was extensively investigated: ECG showed a P mitrale with no right ventricular hypertrophy. Catheterisation was consistent with moderate mitral stenosis. The lung function studies showed decreased tidal volume with reduction of both functional residual capacity and total lung capacity. Surgery was considered but rejected because of the poor condition of the patient. A limited post-mortem was conducted. The mitral valve admitted one finger only, the valve cusps were thickened and the chordae tendineae were markedly short and shrunken.
The specimen consists of the right lung which appears generally more solid than normal. The cut surface shows irregular patchy areas of pale fibrosis studded with small spaces up to about 2mm in diameter. The lung is congested and the pleural surface shows a characteristic nodular appearance.
Diagnosis: Pulmonary fibrosis
What is the pathogenesis of this condition? Pulmonary fibrosis results from chronic interstitial (in the walls of alveoli) inflammation (usual interstitial pneumonia) that is seen in a variety of conditions including asbestosis, various connective tissue diseases, and with a variety of drugs. Some cases are idiopathic. Inflammation results in fibrosis and destruction of alveolar walls resulting in the formation of variably sized airspaces (sometimes resulting in ' honeycomb lung'). Inflammation and fibrosis is patchy.
What are the complications of pulmonary fibrosis?

- Chronic respiratory failure
- Chronic right heart failure

What are the causes of finger clubbing? Causes include primary lung carcinoma (especially squamous cell), chronic suppurative lung diseases (e.g. empyema, abscess, bronchiectasis), pulmonary fibrosis, cyanotic congenital heart disease, subacute infective endocarditis, and others.
What is the likely cause of the patient's mitral stenosis? Chronic rheumatic valve disease.

CASE 22830

This patient was an alcoholic man aged 53. Three years previously he had been severely concussed after a blow on the head by a bottle. Nine months before his death he developed *Strep. viridans* endocarditis, from which he recovered after prolonged treatment. Two months before his death he had grand mal epilepsy after a drinking bout, which settled with anti-convulsants but left him with residual weakness and incoordination of the right arm and leg with some dysarthria. On his last admission he was found unconscious and was admitted confused and disorientated with a large liver, marked ataxia and a positive Romberg's sign. He remained febrile and confused. Blood cultures and brain scans were negative but liver scan showed multiple areas of reduced uptake. Biochemical studies showed inappropriate secretion of ADH. He died essentially undiagnosed.

The specimen is of the left lung sectioned to show a mass of pale tumour tissue arising from the main lower lobe bronchus, that extends distally around the narrowed bronchus along its length. There is a thin line of infiltration of tumour along the pleura of the interlobar fissure of the upper lobe. The reverse of the specimen shows the tumour to have spread directly into the oesophagus, which demonstrates an ulcerating pale mass protruding into the lumen at the junction of its upper and middle thirds.

Diagnosis: Primary lung carcinoma with direct oesophageal spread

What is Romberg's sign? This is a test for loss of position sense (sensory ataxia) in the legs. The patient is asked to stand with his feet close together and then asked to close his eyes. If Romberg's sign is present he will begin to sway about or may even fall. With defective position sense in the legs – e.g. from tabes dorsalis or sensory neuropathy - the patient is unable to maintain his posture without the aid of vision.

What is the likely pathogenesis of the patient's inappropriate ADH secretion? In this case it has probably resulted from 'paraneoplastic' secretion of ADH by the lung tumour, usually a small cell undifferentiated carcinoma. Other causes include a variety of central nervous system disorders such as trauma, meningitis, encephalitis, tumours and haemorrhage, various pulmonary disorders (e.g. empyema, tuberculosis, acute respiratory failure) and a variety of drugs.

What problems result from inappropriate ADH secretion? Inappropriate ADH secretion results in water retention and hyponatraemia causing confusion, irritability, nausea and ultimately fitting and coma.

Comment: Histology reportedly showed undifferentiated small cell (oat cell) carcinoma. At post-mortem metastases were found in mediastinal nodes, liver and para-aortic nodes. The brain was small but coronal sections reportedly showed no focal abnormalities. Mitral valve fibrosis with stenosis was found and the aortic valve was slightly thickened. This would have result from chronic rheumatic valve disease.

CASE 22912

The patient was a woman aged 80 who was admitted in severe cardiac failure with breathlessness and peripheral oedema. There were signs of pneumonia in the left lung and there were bilateral pleural effusions. She was treated vigorously with digoxin and diuretics but failed to respond and died on the 5th day.

The specimen is of the right lung sectioned to show a mass of ante-mortem thrombo-embolus impacted in the main pulmonary artery and extending into the artery to the lower lobe. There is a small well-demarcated pale lesion with a hyperaemic rim 8mm in diameter, in the posterior basal segment of the lobe. Larger 2cm diameter pleural based pale lesions are seen in the lower lobe on the reverse of the specimen.

Diagnosis: Pulmonary embolism with infarction

CASE 22946A and B

This 51-year old man presented 3 years before his death with dyspnoea and weight loss. He had smoked 30-40 cigarettes daily for 30 years. He was Mantoux negative and had not had any significant occupational history. He died from cardio-respiratory failure due to chronic obstructive lung disease with cor pulmonale. Atherosclerosis was reportedly found at autopsy in the main pulmonary arteries. There are two specimens.

Specimen A. The right lung shows advanced emphysema in the apical and subpleural regions of the upper lobe. At the apex is a large collapsed bulla some 5cm in diameter. Scattered throughout the upper and lower lobes are some abnormally dilated bronchi.
Specimen B. The left lung demonstrates similar changes.
Diagnosis: Emphysema and bronchiectasis
What is the significance of the presence of atherosclerosis in the pulmonary arteries? This is evidence that the patient had chronic pulmonary hypertension as a complication of his emphysema and bronchiectasis, since atherosclerosis does not usually occur in the pulmonary arteries because of the low pressure.
Comment: There is no information given to suggest the causes of the patient's bronchiectasis. Recurrent pulmonary infection is one possibility.

CASE 23103
The patient was a man aged 57 who had had chronic obstructive lung disease for many years, and bronchial asthma for 30 years. He was admitted finally with congestive cardiac failure, which was controlled, but he died from respiratory failure.
The specimen of the right lung shows a collapsed and fibrous upper lobe containing dilated bronchi with fibrous ridges in their walls. Also present is a unilocular apical cavity 3cm in diameter with a lining of grey and black fibrous tissue. The middle and lower lobes show patchy areas of fibrosis and a dilated bronchus is present in the lower lobe (back of pot). There is considerable pleural thickening with adhesions.
Diagnosis: Localised bronchiectasis
Comment: No information is given as to the cause of this: ?tuberculosis ?recurrent pulmonary infection

CASE 23326
The patient was a 42-year old diabetic woman who died following a myocardial infarction. Six years before her death she was diagnosed with pulmonary tuberculosis involving both lungs. This was treated with an apparently adequate response. Her final illness lasted 2 weeks, with angina pectoris increasing in severity. ECG showed myocardial infarction. A few weeks later anginal pain returned and there was a further infarct complicated by congestive failure and a final sudden cardiac arrest.
The specimen consists of a section of the right lung. Three old encapsulated pale yellow lesions, the largest 15mm in diameter, are present in the posterior segment of the upper lobe. Patchy ill-defined areas of pale consolidation are present in the lower and middle lobes.
Diagnosis: Healed tuberculosis
Comment: The patchy consolidation probably represents a bronchopneumonia developing during her final admission.

CASE 23346
No clinical details are available on this patient.
The specimen shows the left lung with irregular cavities with a pigmented lining and associated fibrosis situated in the apical segment of the upper lobe and at the apex of the lower lobe. Both lobes show patchy emphysema and there is pneumonic consolidation in both lobes inferiorly. Near the apex of the lower lobe is an elongated walled off area of pleura which in life would have contained fluid. The pleura is fibrotic generally. There is ante-mortem thrombus in many of the lower lobe vessels.
Diagnosis: The features are those of a destructive process, with emphysema and larger pigmented cavities. These latter features are suggestive of a pneumoconiosis.
Comment: Pneumoconioses are lung diseases developing from the inhalation of a variety of dusts generally acquired via occupational exposure. Silicosis, coal workers pneumoconiosis and asbestosis are examples. The different diseases tend to have somewhat different macroscopic features, however, without history and histological examination the precise cause of this case is uncertain. They all involve chronic inflammation and scarring.

CASE 23390
The patient was an 82-year old man who presented initially with an 18-month history of exertional dyspnoea that had become progressively worse. Physical examination at the time of his initial presentation showed central cyanosis but no clubbing. Breath sounds were present in all areas and were bronchial in nature at both bases. Expiratory wheezes were heard in all areas. A chest x-ray showed scattered reticulo-nodular opacities. He deteriorated over the next six months and was finally admitted because of extreme shortness of breath. He did not respond to treatment and died suddenly from a pulmonary embolus.
The specimen consists of the medial portion of the left lung. There has been extensive destruction of the normal lung parenchyma, with abnormally large air spaces criss-crossed by thin bands, predominantly in subpleural areas. Some of the air space walls appear to be thickened. There is ante-mortem thrombo-embolus in medium-sized vessels of both lobes but there is no associated infarction.
Diagnosis: Advanced emphysema
Comment: The appearance is not typical of emphysema as there appears to be some thickening of alveolar walls as seen with pulmonary fibrosis, although in that condition the cysts are usually smaller. Perhaps both conditions are present. Histological examination would help distinguish the two.

CASE 23496
The patient was a 67-year old man who had been referred from the chest clinic for investigation of an infiltrating lesion in the left upper lobe. He had been a heavy smoker and had had a chronic productive cough for 6 months before admission. He had lost 10kg in weight over the preceding month. Sputum cytology showed malignant cells. He developed paraplegia and later had increasing dyspnoea that continued until he died.
The specimen is a section of the left lung showing a large irregular mass of cream coloured tissue 90mm in maximum dimension arising in the hilar region of the upper lobe and spreading to surround the arch of the aorta and to involve lymph nodes at the carina. The primary and metastatic tumour shows patchy necrosis. There is some collapse in the upper lobe distal to the mass. The lateral aspect of the upper lobe is firmly adherent to the rib cage probably related to malignant infiltration.
Diagnosis: Primary lung carcinoma with lymph node metastases

CASE 23671
The patient was a man aged 62 in whom routine chest x-ray showed an opacity at the left apex. There were symptoms of general malaise and a recent weight loss of 16kg. Two months later repeat x-ray showed that the opacity had cavitated. He was a heavy smoker. His condition steadily deteriorated and he died after a few weeks.
The specimen consists of the left lung sectioned to show a 10cm diameter extensively cavitated lesion at the apex of the upper lobe. The wall of the cavity is composed of ragged sloughing necrotic tissue. A few areas of ill-defined pale tumour are present in the wall including some involving the pleura which shows associated fibrosis. The remainder of the lung shows patchy emphysema with anthracosis, together with some patches of bronchopneumonic consolidation in the lower lobe.
Diagnosis: Primary lung carcinoma
Comment: Histology reportedly showed squamous cell carcinoma.

CASE 24068
The patient was a 66-year old man who presented with epigastric discomfort and regurgitation of food. Gastrectomy was performed and histology revealed malignant lymphoma. He was later noted to have multiple lung masses that regressed considerably with radiotherapy. However metastatic deposits recurred in the liver and lungs and he eventually died.
The specimen shows a slice of left lung with a number of well-circumscribed pale lesions up to 5cm in diameter, with no obvious necrosis.
Diagnosis: Lymphoma

Comment: Macroscopically, the differential diagnosis is metastasis.

CASE 24133
The patient was a man aged 65 whose voice had been hoarse for 10 months.
The specimen consists of the larynx, epiglottis and the upper 1cm of trachea opened from behind. There is an irregular pale ulcerated lesion 35x15mm involving the left vocal cord and mucosa beneath and extending across the midline anteriorly. The right vocal cord appears normal.
Diagnosis: Carcinoma of the larynx

CASE 24236
This patient was a woman aged 29 who was first admitted to the RAH 6 months before her death with a 3-month history of lassitude, progressive abdominal extension and weight loss. On examination the liver and spleen were grossly enlarged and a scan showed almost no normal tissue in the right lobe of the liver. Laparotomy and biopsy revealed a primary hepatic tumour. The right branch of the hepatic artery was ligated and the gallbladder removed. She died a few weeks later.
The specimen is of the right lung sectioned to show numerous rounded well-circumscribed grey lesions varying in size up to 2cm in diameter. Their cut surface is generally homogenous though a few areas suggest necrosis. Ante-mortem thrombo-embolus is noted in the artery to the lower lobe.
Diagnosis: Metastases to lung
Comment: The lesions in this specimen have the typical appearance of secondary or metastatic tumours in the lung. The deposits are generally multiple and have deceptively well demarcated margins. Metastases can however be single and it is impossible then to differentiate them from a primary carcinoma on the basis of the macroscopic appearance alone. It may also be impossible to differentiate a primary cancer from a single metastases on histological examination, though the patient's history e.g. previous diagnosis and/or treatment of another cancer, histological appearance (of a type not occurring primarily in the lung) or connection with an area of squamous dysplasia in the case of a squamous cell carcinoma, may help.

CASE 24517
The patient was a man aged 55 who one year previously had had a haemoptysis. Bronchoscopy showed no abnormality but he subsequently died following a large haemoptysis.
The specimen consists of a coronal section through both lungs and the main airways. There is a large cavitating lesion 70mm in diameter in the left upper lobe. No capsule is present and the cavity is lined by necrotic grey tissue. A major bronchus opens directly into the lower aspect of the cavity. The left lower lobe is airless and shows extensive consolidation. Immediately adjacent to the lesion above the left main bronchus and around the arch of the aorta is an irregular pale lesion 45x40mm. The arch of the aorta demonstrates atherosclerosis. Lymph nodes are pigmented and one beneath the bifurcation of the trachea is enlarged and shows infiltration by pale tissue in its upper half. The right lung shows patchy bronchopneumonic consolidation.
Diagnosis: Carcinoma of the lung with cavitation
Comment: The differential diagnosis here includes lung carcinoma with an abscess.
Histology reportedly showed squamous cell carcinoma.

CASE 24529
This patient was a previously fit and active man aged 62. Four months before death he had suffered a large anterior myocardial infarction complicated by left ventricular failure, which failed to respond to digitalis and diuretics. Two weeks before death he suffered recurrent haemoptysis. He was admitted to the RAH where on the 5th day he suddenly became intensely breathless, sat on the bed pan, and died.
The specimen consists of a portion of right lung sectioned to show an 8x3cm wedge shaped pleural based consolidated haemorrhagic lesion within the lower lobe. Ante-mortem thrombo-embolus is visible in large vessels in both lobes.

Diagnosis: Pulmonary thrombo-embolism with infarction
Correlate the clinical history with the pathological findings. This patient was at risk of deep venous thrombosis because of cardiac failure and possibly limited mobility as a result. The infarct has been there for some days, possibly resulting from the emboli that gave rise to his haemoptysis 2 weeks before death. The infarct has probably not killed him. This may have been due to a cardiac arrest as a result of ischaemic heart disease or from recurrent massive pulmonary embolism.
What is the pathogenesis of pulmonary infarction?
Due to the dual blood supply of the lung, infarction is not a usual consequence of pulmonary embolism. It can occur, however, in two situations:

- where the bronchial supply is somehow compromised e.g. in individuals with pre-existing cardiac or pulmonary disease
- when emboli are small and occlude small end-arteriolar pulmonary branches

CASE 24544
This patient was a man aged 62 who was admitted to a country hospital with what was thought to be a right lower lobe pneumonia. He had been a heavy smoker for many years and there had been recent haemoptysis. A pleural effusion was found and cytological examination of the pleural fluid was suspicious of malignant cells. X-ray showed collapse of the bodies of T7, L3 and L4. He was transferred to the RAH. His left leg was grossly swollen and oedematous. There was pain on palpation over the lower lumbar vertebral spines and the liver was enlarged 10cm below the costal margin. He died 4 days after admission.
The specimen is of the right lung sectioned to show a lesion arising apparently from the main bronchus at the hilum (see back of pot). The bronchial wall is thickened and tumour spreads into adjacent lung and lymph nodes. There is extensive thickening of bronchial walls elsewhere and tumour permeates the pleura of the interlobar fissures with nodular pleural deposits elsehwere .
Diagnosis: Primary lung carcinoma with lymphangitis carcinomatosis
What is the likely cause of the left leg swelling? Deep venous thrombosis.
What risk factors does the patient have for this condition? Malignancy and possible secondaries compressing pelvic vessels.
Comment: At autopsy there were widespread metastases in the mediastinum, liver, kidneys, adrenals, peritoneum and spine and there was thrombosis of the left iliac and femoral veins. Histology reportedly showed a large-celled pleomorphic carcinoma focally forming mucin (poorly differentiated adenocarcinoma).

CASE 24592
This patient was a man aged 73 who died from a cerebral metastasis originating in a carcinoma of the right lung. The specimen was an incidental finding at post-mortem.
The specimen is a portion of left lung sectioned to show an oval encapsulated calcified white lesion at the apex of the upper lobe measuring 2x3cm. The overlying pleura is thickened with adhesions to the parietal pleura. There is moderate focal emphysema with anthracosis throughout the remainder of the lung.
Diagnosis: Inactive secondary tuberculosis
Comment: This is the pattern of infection seen in individuals who are either re-infected with *Mycobacterium tuberculosis* or have re-activation of a latent infection, but in whom the disease has been limited by their immune response or treatment.

CASE 24715
The patient was a man aged 46 with a lump in the right chest wall that had been present for 8 months. Biopsy showed chondrosarcoma and the lesion was resected. He remained well for 7 months until he developed a recurrence at the same site, which was excised. Six months later lumps appeared on the scalp, face, neck, anterior chest wall and right foot. He died after 3 weeks in hospital with signs of cerebral irritation.

The specimen is of the left lung sectioned to show numerous rounded pale grey lesions, with well-demarcated borders, varying in size up to about 25mm in diameter. Their cut surface is lobular with a cartilaginous appearance and with focal marked central degeneration. There is patchy broncho-pneumonic consolidation centrally.
Diagnosis: Metastatic deposits of chondrosarcoma

CASE 24757
The patient was a man aged 77. He was a reformed heavy smoker. Four months previously he had been in hospital with a lung cavity and a month later bronchoscopy revealed stenosis of the right upper lobe bronchus. He also had a 3 month history of anorexia and loss of weight. His last admission was precipitated by a large haemoptysis and right sided chest pain. There were signs of right apical consolidation and there was a cough with profuse foul sputum from which *Klebsiella* organisms were grown. The right arm was weak. He died a month later.
The specimen comprises a portion of right lung. Within the upper lobe is a large cavitating pale lesion with irregular borders measuring approximately 12cm in maximum dimension. The lesion surrounds a large bronchus (seen from back of pot). Lung distal to the lesion appears collapsed and consolidated and contains dilated mucus filled bronchi and a 1cm abscess cavity. Several hilar lymph nodes are enlarged and appear to be infiltrated by similar material to the main lesion. The rest of the lung shows patchy anthracotic pigment and emphysematous change.
Diagnosis: Primary carcinoma of the lung with bronchiectasis and pneumonia
What might have been the basis for his right arm weakness? And his right chest pain? The right arm weakness may have been the result of cerebral metastasis. One could also consider direct invasion of the right brachial plexus as a cause, though this does not look probable from the specimen. The development of chest pain in an individual with lung cancer indicates pleural involvement or pneumonia causing pleuritis.
Comment: Histology reportedly showed squamous cell carcinoma. These are the tumours most likely to undergo necrosis and cavitate.

CASE 24815
This 78-year old man had a six-month history of hoarseness, dysphagia and a lump in the neck. Examination showed a mass deep to the left sterno-mastoid and attached to deeper structures, as well as axillary lymphadenopathy.
What is the probable nature of the neck lump?
An enlarged cervical lymph node containing metastatic tumour.
The specimen consists of the tongue, larynx, hypopharynx, upper oesophagus and thyroid opened from behind. An ulcerated irregular pale lesion involving the upper oesophagus, left aryepiglottic fold, piriform fossa and larynx is present.
Diagnosis: Carcinoma of the larynx
What histological type is this tumour likely to be? Squamous cell carcinoma

CASE 24866
The patient was a woman aged 62 with an 18-month history of right arm and leg weakness. Examination showed wasting of all muscle groups, dysarthria, dysphagia and fasciculation of tongue and limb muscles. The diagnosis of motor neurone disease was confirmed by E.M.G. Her terminal admission was with marked mucus retention.
The specimen of the right lung shows small patchy areas of grey consolidation throughout the lower lobe and in the posterior segment of the upper lobe.
Diagnosis: Bronchopneumonia

CASE 24986
The patient was a man aged 84 who was admitted for prostatectomy. While awaiting operation he was found to have left ventricular failure and he was treated with frusemide. He then developed hypernatraemia with high chloride and an elevated creatinine. A little later the left calf became swollen. He died suddenly 3 days later.
The specimen is preserved in two jars.
Specimen a is a slice of right lung that shows a round haemorrhagic consolidated lesion 5cm in diameter in the posterior basal segment of the lower lobe. The mass appears to be beginning to cavitate. Ante-mortem thrombo-embolus is visible in a vessel immediately adjacent to the lesion. There is extensive fibrinous pleurisy.
Specimen b is a section of left lung showing two haemorrhagic lesions, the smaller of which is present at the base of the specimen and has a similar appearance to the lesion in A. The larger lesion is a haemorrhagic consolidated wedge-shaped pleural based mass in the mid zone of the specimen. There is congestion and mild fibrinous reaction of the overlying pleura.
Diagnosis: Cavitating pulmonary infarcts

CASE 25010
This man aged 68 had a long history of emphysema for which he had previous admissions to the RAH. Finally he developed signs of right heart failure which resisted treatment and he died 3 weeks after admission.
The specimen is a section of anthracotic left lung that shows widespread patchy destruction of alveolar walls, resulting in abnormally large alveolar air spaces. A large bulla crossed by spidery strands is present subpleurally at the base of the lower lobe with a smaller bulla above. There are also areas of pleural fibrosis at the apex of both lobes and patchy consolidation.
Diagnosis: Emphysema

CASE 25025
The patient was a 58-year old from Alice Springs, with progressive weakness of the lower limbs which was diagnosed as transverse myelitis. He also had an alcoholic neuropathy and encephalopathy. In the RAH he developed seizures. The WCC was 34,000 and the bilirubin was 10mg%. A blood picture showed atypical lymphocytes but the Paul-Bunnel test was negative. He died after a month in hospital.
The specimen consists of the right lung sectioned to show patchy confluent consolidation throughout the posterior half of the lung. There is surrounding congestion and lymph nodes at the hilum are swollen and haemorrhagic. Ante-mortem thrombi are visible in medium-sized vessels. Major air passages are inflamed.
Diagnosis: Bronchopneumonia

CASE 25037
This patient was a woman aged 26 who had suffered chronic recurrent respiratory disease since the age of 2 after an attack of measles. She managed to lead an active life in spite of the recurrent attacks of cough, sputum and breathlessness. Finally she was admitted to Modbury Hospital with left lower lobe pneumonia. She developed respiratory failure and was transferred to the RAH and placed on a respirator. Next day she became comatose with fits. Subsequently there were left-sided choreiform movements and right hemiparesis. Lumbar puncture showed blood-stained CSF. Respiratory failure progressed in spite of 100% oxygen and she died.
The specimen is of the left lung. Within the lower lobe and lingular segment of the upper lobe are abnormally dilated bronchi extending to the pleural surface. Their walls are thickened and the intervening lung tissue is fibrous and airless. There is congestion of the upper lobe with extensive patchy ill-defined consolidation. The pleura is fibrotic with adhesions to the parietal pleura.
Diagnosis: Advanced bronchiectasis with pneumonia

Comment: Bronchiectasis may follow recurrent necrotising infections of the lungs (now uncommon), in this case following an episode of measles at the age of 2. The recurrent episodes of cough, sputum and breathlessness are also typical of bronchiectasis.
The neurological symptoms suggest that she may have developed one of the recognised complications of bronchiectasis: "metastatic" brain abscesses (although this does not explain the blood stained CSF). At autopsy, there were focal small areas of subarachnoid haemorrhage of uncertain significance but no focal brain abnormalities were found. The right lung also showed bronchiectasas in its lower regions with extensive pneumonic consolidation.
Other complications of bronchiectasis include systemic amyloidosis and cor pulmonale.

CASE 25114
The patient was a man aged 47 who had smoked 20 cigarettes per day for many years. Sixteen years previously (in 1947) a pleural effusion had been drained in Europe, but he did not receive any anti-tuberculous drug treatment at that time. Since migrating to Australia in 1956 he had been followed by annual x-ray at the chest clinic. There were calcified opacities in the apices and hilar regions. X-ray in September 1973 showed a further opacity in the right middle lobe, which was interpreted as pneumonia or collapse. Tomogram showed a large mass in the right hilum depressing the right middle lobe bronchus. The sputum was negative for malignant cells but pleural fluid aspiration was positive. Later, because of pain in the right shoulder, lumbar spine and ribs, a total body scan was performed which showed areas of increased isotope uptake. He continued to deteriorate and died 7 weeks after admission.
The specimen is of the right lung sectioned to show a pale fleshy lesion at the hilum extending into the middle lobe, which is partly collapsed. The main lower lobe bronchus is narrowed by the lesion and its distal portion shows cylindrical bronchiectasis. There is a further 25mm mass of cream coloured tissue in the posterior basal segment of the lower lobe and other small scattered foci of metastatic tumour elsewhere. A tiny focus of presumably tuberculous calcification with surrounding scarring is noted in the upper lobe towards the apex.
Diagnosis: Primary lung carcinoma
Comment: Histology reportedly showed a very pleomorphic squamous cell carcinoma with many giant cells.

CASE 25257
The patient was a man aged 86 who had been a heavy smoker. A carcinoma of the lung had been diagnosed 8 months previously. Prior to his last admission he had a one month history of left-sided chest pain with progressive general weakness. There was dullness to percussion in the left upper zone posteriorly. X-ray reportedly showed a small right-sided pleural effusion and a cavitated lesion in the left upper zone. He died after 3 weeks in hospital.
The specimen is of left lung sectioned to show a pale lesion with ill-defined margins measuring 55x50mm in the posterior apical region. The lesion appears to be arising from and obstructing the upper lobe bronchus. The lesion extends outwards to the pleura and the back of the pot shows a ragged cavity which has been torn open during removal of the lung. The remainder of the lung shows anthracosis and some emphysema, particularly evident in the anterior portion of the upper lobe.
Diagnosis: Primary lung carcinoma
Comment: Histology reportedly showed well-differentiated squamous cell carcinoma.

CASE 25275
The patient was a woman aged 63 who was admitted with general weakness, malaise, breathlessness, chest discomfort, vomiting, fever and a productive cough for 5 days. A diagnosis was made of chronic obstructive airways disease with acute bronchitis, together with bronchospasm and mild cardiac failure. Treatment with aminophylline and intravenous ampicillin was begun. During the following days she became drowsy and went into respiratory failure with marked hypotension and a rise in serum potassium.

Intermittent positive pressure ventilation was given. Blood culture grew *Pseudomonas aeruginosa*. There was a leucocytosis of 26 x 10^9/L (N 4-12 x10^9/L). Fever continued and a cavitated lesion at the left base was found on x-ray. A massive discharge of yellow-white material occurred from the tracheostomy wound, and she died shortly thereafter.
The specimen consists of the left lung sectioned to show a large ragged unilocular abscess 55mm in diameter in the hilar region of the upper lobe adjacent to the interlobar fissure. There is some fibrous encapsulation and surrounding consolidation and the abscess is lined by necrotic material. There is a smaller abscess 30mm in diameter in the posterior basal segment of the lower lobe. This abscess is lined by pus and has a thin fibrous wall.
Diagnosis: Lung abscesses

CASE 25295
The patient was a woman aged 56. Thirty years previously she had contracted pulmonary tuberculosis of the left lung which was treated by artificial pneumothorax. Her last admission was for treatment of a right parietal convexity meningioma. While in hospital she developed thrombosis of the basilar artery, became unconscious and died of pulmonary embolism.
The specimen consists of the left lung and left pleural cavity, but the lung itself cannot be seen. The bulk of the specimen consists of the pleural cavity which is completely filled with thick putty-like caseous exudate. Remnants of fibrous septa persist. The left main bronchus is completely stenosed and is represented by a thick fibrous cord attached to the medial surface of the lung. This is seen on the back of the specimen (difficult to appreciate) which also shows recent ante-mortem thrombo-embolus impacted in the stump of the pulmonary artery at the hilum.
Diagnosis: Encysted inactive tuberculous empyema

CASE 25297
The patient was a woman aged 58 who lived with her brother. She was under treatment for chronic anxiety neurosis. Both she and her brother were heavy drinkers. She had had an attack of vertigo a week before her last admission and had been confined to bed since then. On examination she was cyanosed, stuporous and drowsy, with a temperature of 38°C and a respiratory rate of 30 breaths/min. Chest x-ray showed consolidation of the entire right lung posteriorly and of the right upper lobe. Blood gas studies showed severe derangement of all respiratory function. Blood cultures grew staphylococci, streptococci and pneumococci. She developed acute renal failure with a rising blood urea and died after 3 weeks in hospital.
The specimen consists of the right lung sectioned to show two cavities. One oval cavity in the subapical region measures 4cm in length. A larger cavity measuring 8x5cm is present in the lower lobe posteriorly beneath the pleura. Both cavities contain necrotic lung tissue. There is a little surrounding fibrous reaction and much of the surrounding lung shows consolidation. There is mild over-lying pleurisy.
Diagnosis: Lung abscesses and pneumonia

CASE 25300
The patient was a man aged 66 with a history of myocardial infarction and congestive cardiac failure. He was admitted after collapsing at home. On examination there were bilateral basal crackles and the JVP was elevated, but the ECG showed no gross ischaemic changes. He was given diuretics. Next morning he coughed up bright blood and developed a mild fever. Heparin was administered and lung scan showed pulmonary embolism. On the second day he suddenly became shocked and died.
The specimen consists of the right lung sectioned to show massive recent ante-mortem thrombo-embolus occluding the artery to the lower lobe. Most of the lower lobe appears deeply haemorrhagic, with the sparing of only a few small areas at the base, centrally and against the interlobar fissure. There is some overlying fibrinous pleuritis.
Diagnosis: Pulmonary embolism with infarction

CASE 25323
The patient was a woman aged 68 who died of an extensive myocardial infarction. Many years previously she had pulmonary tuberculosis and a left lobectomy had been performed 18 years ago. Thereafter she was followed in the Chest Clinic but her sputum remained negative and her chest x-ray did not change.
The specimen consists of a portion of left lung. Both lobes contain encapsulated nodules of white calcified material varying in size from a few mm to 2cm in diameter. There is patchy associated fibrosis. The overlying pleura is fibrotically thickened, especially at the apex.
Diagnosis: Widespread inactive tuberculosis

CASE 25361
The patient was a man aged 71 who had smoked about 40 cigarettes a day for 56 years and who had a history of congestive cardiac failure treated with digoxin and diuretics. He had been increasingly breathless for 3 days, attributed by his local doctor to a left pleural effusion. On examination there was an enlarged nodular liver extending 8cm below the costal margin. The thyroid gland was also enlarged. On bronchoscopy there was an obstructing fungating tumour at the origin of the left upper lobe bronchus, reducing the orifice to a slit. He died after 10 days in hospital.
The specimen consists of the left lung and mediastinal structures with larynx and thyroid. There is a large stellate pale mass with infiltrating margins, measuring about 7 x 5cm in the centre of the upper lobe. The lesion has spread by direct continuity to form a mass measuring 4 x 3 x 3cm involving several lymph nodes lying above the left main bronchus. A similar large involved lymph node lies beneath the bifurcation of the trachea. The anteromedial aspect of the left upper lobe is directly adherent to a large pale mass 8cm in diameter in the anterior mediastinum. The innominate vein runs across the superior surface of this neoplastic mass and contains an ante-mortem thrombus. The thyroid is enlarged and nodular with an intrathoracic extension along the left side of the trachea. The thyroid contains scattered white tumour nodules up to 2cm in diameter.
Diagnosis: Primary carcinoma of the lung with mediastinal and lymph node spread and multinodular goitre containing metastases
Comment: Histology reportedly showed an oat-cell carcinoma.

CASE 25395
The patient was a man aged 57 in whom an infiltrating poorly-differentiated squamous cell carcinoma of the right lung had been discovered 6 months previously. Radiotherapy was given. He had smoked a pipe and cigarettes for many years. On his last admission he was wasted and there was a right pleural effusion. He died 3 days later.
The specimen consists of the right lung sectioned to show a pale tumour mass 7x4cm arising from the main lower lobe bronchus. The bronchus is obstructed and the lower and middle lobes are collapsed. The tumour extends directly to involve lymph nodes and surround the main pulmonary artery at the hilum.
Diagnosis: Primary lung carcinoma

CASE 25431
The patient was a man aged 60 who had had a myocardial infarct 2 years previously. A year later congestive cardiac failure developed with increasing breathlessness and orthopnoea. On his last admission he was markedly breathless, the liver was enlarged and there had been haemoptysis. The BP was 115/85, the JVP was elevated 3cm and the ECG showed Wenckebach phenomenon. He remained breathless and his haemoptysis continued. After some time pain developed in the left calf. He became mildly jaundiced and died after 3 weeks in hospital.
What is the Wenckebach phenomenon? This is a form of second degree AV block (also known as Mobitz type 1 block). On ECG the PR interval gradually increases until there is a P wave not followed by a QRS complex. It is almost always due to impaired conduction in the AV node. It is usually benign and may

be seen in children and in individuals with increased vagal tone but may also arise in ischaemic heart disease with ischaemia of the AV node.
The specimen is the right lung sectioned to show a mass of ante-mortem thrombo-embolus blocking the main pulmonary artery at the hilum and extending into the arteries to the lower and middle lobes. The lower and middle lobes demonstrate extensive patchy consolidation and haemorrhage. There is quite marked overlying fibrinous pleurisy.
Diagnosis: Pulmonary embolism with infarction

CASE 25448
The patient was a man aged 59 who presented 2 years earlier with a fungating squamous cell carcinoma in the floor of the mouth, for which he underwent extensive surgery. Five months later a nodule appeared on the right side of the neck. Finally he presented with pain in the left side of the chest and x-ray showed a large mass at the left apex. There was marked hypercalcaemia. The apical lesion enlarged rapidly, his condition deteriorated and terminally grand mal fits occurred.
The specimen consists of a section of anthracotic left lung. A large cavitating lesion 8cm in diameter is present at the apex of the upper lobe. It has no obvious capsule and is lined by necrotic tissue. Hilar lymph nodes are anthracotic and enlarged.
Diagnosis: Carcinoma of the lung, probably primary
Could this lesion be related to his original oral lesion? It could but it is unlikely, even given the fact that the lung tumour was reportedly a squamous cell carcinoma. The extensive necrosis here suggests a primary lung lesion and upper aerodigestive tract cancers don't tend to metastasise widely. It is difficult to tell macroscopically if the enlarged hilar nodes contain tumour. If they did, it would also be more in keeping with a primary in the lung. The hypercalcaemia would also be more in keeping with a lung carcinoma – either resulting from secretion of a PTH-like hormone or from widespread skeletal metastases.

CASE 25481
The patient was a man aged 67 with a long history of repeated chest infections, breathlessness and smoker's cough. He was admitted with right sided chest pain made worse by breathing and coughing. The BP was 150/70, the JVP was elevated 4cm and there was marked finger clubbing. Chest x-ray showed severe emphysema and patches which were thought to be bronchopneumonia. A lung biopsy was taken which showed active interstitial pneumonitis.
The specimen consists of the left lung divided in the sagittal plane. The cut surface shows marked destructive emphysema with anthracosis. Some of the air space walls appear to be thickened. The reverse of the specimen shows many large bullae covered by slightly thickened pleura.
Diagnosis: Advanced emphysema
Comment: The appearance is not typical of emphysema as there appears to be some thickening of alveolar walls as seen with pulmonary fibrosis, although in that condition the cysts are usually smaller. Perhaps both conditions are present. Histological examination would help distinguish the two.

CASE 25583
The patient was a girl aged 13 who presented with a history of several days pain in the chest and abdomen, accompanied by severe headache. She soon became drowsy with hallucinations and inappropriate speech. These were followed by photophobia, with a stiff neck and right-sided fits. Lumbar puncture and CSF examination suggested a viral infection. On the first hospital day lumbar puncture showed a clear colourless CSF containing two polymorphs, 225 RBC and 7 lymphocytes/ml. No bacteria or cryptococci were seen. Four days later the CSF contained 3 polymorphs, 10 RBC and 215 lymphocytes/ml. Herpes simplex virus was identified. She became comatose, and brain biopsy through a left temporal burrhole showed necrosis and probable encephalitis. Tracheostomy was performed but aspiration pneumonia developed with a right empyema and bilateral pneumothoraces. She died on the 12th day in hospital.

The specimen consists of a portion of the right lung. There are widespread scattered pale patches of consolidation with some confluence in the mid-zones anteriorly. In addition, there is an ovoid 5x2cm encapsulated cavity containing necrotic exudate in the posterior segment of the upper lobe lying just above the interlobar fissure. A further 1cm abscess cavity is present just inferior to the first in the lower lobe. The pleura is inflamed with fibrinous exudate especially anteriorly.
Diagnosis: Bronchopneumonia with abscess formation

CASE 25587
The patient was a woman aged 83 with haematemesis and melaena from multiple peptic ulcers of the stomach and oesophagus.
The specimen consists of a slice of the left lung. A large laminated ante-mortem thrombo-embolus is impacted in the main pulmonary artery at the hilum, and extends into the lower lobe artery. There is no obvious infarction.
Diagnosis: Pulmonary embolism

CASE 25662
The patient was a man aged 67 who had been treated for two years for sideroblastic anaemia. Preleukaemic changes were found in the bone marrow. Finally he developed acute myeloblastic leukaemia and died. Two coin sized lesions had been noted in the left lung shortly before his death.
The specimen consists of a slice of left lung. In the apical segment of the lower lobe, lying just beneath the pleura of the interlobar fissure, are 2 rounded slightly irregular pale lesions 3 and 2cm in diameter. The larger lesion shows foci of necrosis.
Diagnosis and comment: Lung carcinoma. This specimen is somewhat unusual. The presence of two separate lesions suggests that they are metastatic tumours, yet histology revealed something interesting. The smaller lesion was a typical squamous cell carcinoma and the larger mass a large-cell anaplastic carcinoma. Autopsy examination was limited to the thorax.
Possible scenarios include:

- both are primary cancer
- one is a primary and one is a metastasis
- both are metastases

CASE 50127/81
The patient was a man aged 65 who had carcinoma of the bile ducts with ascending cholangitis.
The specimen of left lung shows the main lower lobe pulmonary artery and one of the major segmental upper lobe arteries to be plugged by recent thrombo-embolus. The lower lobe demonstrates patchy associated congestion.
Diagnosis: Multiple pulmonary emboli with possible early infarction

CASE 13938/82
The patient was a man aged 65.
The specimen consists of a portion of left lung with an apical mass measuring 75x40mm. The mass has irregular margins and has flecks of carbon pigment, but no obvious haemorrhage or necrosis. The overlying pleura is mildly thickened and inflamed.
Diagnosis: Primary carcinoma of the lung (histology showed squamous cell carcinoma)

CASE 50091/82
The patient was a woman aged 66. She had multiple injuries, including fractured ribs, from a motor vehicle accident. She developed adult respiratory distress syndrome.
The specimen comprises a lobe of lung which shows widespread patchy areas of consolidation. Intervening lung also appears firm with obliteration of alveolar spaces.

Diagnosis: Bronchopneumonia with features in keeping with diffuse alveolar damage.

What are adult respiratory distress syndrome (ARDS) and diffuse alveolar damage?

ARDS is a syndrome arising from a variety of severe insults that result in severe alveolar and pulmonary capillary injury. Causes include shock, DIC, acute pancreatitis, a variety of irritant gases and chemicals *et al*. The insult induces the release of inflammatory cytokines from macrophages leading to capillary and alveolar epithelial damage with the formation of hyaline membranes that line alveolar walls, oedema and inflammation, the histological changes referred to as diffuse alveolar damage. Macroscopically the lungs are heavy, firm and congested. Clinically patients develop acute respiratory failure.

CASE 50200/82

The patient was a man aged 79.

The specimen of left lung shows the upper lobe to be uniformly consolidated and pale. An additional focus of pale consolidation about 15 mm in diameter is present in the middle of the lower lobe. There is anthracosis and anthracotic nodes are noted at the hilum. There is an area of pigmented subpleural fibrosis at the apex of uncertain origin.

Diagnosis: Lobar pneumonia

On the basis of the pathological findings, what symptoms and signs would the patient have had during life? A relatively short history (days) of malaise, fever and productive cough, possibly with pleuritic chest pain. On examination, typically there would be fever, tachycardia and tachypnoea with a dull percussion note, bronchial breath sounds and increased vocal resonance over the left upper lobe, possibly with a friction rub (although there does not seem to be much pleuritis in the specimen).

CASE 50328/82B

The patient was an 84-year old woman who had recently undergone repair of a fracture of the right neck of femur.

The specimen appears to be of right lung and demonstrates congestion with patchy consolidation most marked posteriorly.

Diagnosis: Bronchopneumonia

On the basis of the pathological findings, what symptoms and signs would the patient have had during life?

Patients with bronchopneumonia complain of malaise, fever and productive cough. Since there is no significant pleural involvement in bronchopneumonia they generally do not complain of pleuritic chest pain. On examination, typically there would be fever, tachycardia and tachypnoea. They may demonstrate a symmetric decrease in chest expansion and harsh vesicular breath sounds with prolonged expiration, wheezes and coarse crackles.

CASE 50392/82

The patient was a woman aged 56.

The specimen of right lung shows congestion and extensive patchy consolidation which in some areas is pale in colour. The serosal surface is covered in places by thick fibrinous exudate. Anteriorly the lung shows several subpleural bullae and in the upper zones shows small cystic spaces with thickened walls suggestive of pulmonary fibrosis.

Diagnosis: Extensive pneumonia

CASE 50435/82A
The patient was a man aged 66, who had had a malignant melanoma removed from the shoulder three years earlier.
The specimen consists of the right lung with 3 fairly well-demarcated lesions in the upper and middle lobes. The largest measures 60mm in maximum dimension. The lesions exhibit some haemorrhage and necrosis.
Diagnosis: Metastatic malignant melanoma

CASE 50455/82
No clinical history is available.
The specimen consists of a slice of left lung. The lung demonstrates patchy pallor andsome abnormally large airspaces with thickened walls giving a honeycomb appearance focally.
Diagnosis: Diffuse interstitial pulmonary fibrosis
On the basis of the pathological findings, what symptoms and signs would the patient have had during life?
Pulmonary fibrosis leads to severe dyspnoea and in advanced cases hypoxia, cyanosis and cor pulmonale. On examination they have symmetrically decreased chest expansion, increased vocal resonance and on auscultation harsh vesicular breath sounds with prolonged expiration and end inspiratory crackles not influenced by coughing. They may eventually develop signs of right heart failure secondary to pulmonary hypertension i.e. raised JVP and pitting oedema of the ankles.

CASE 50473/82
No clinical history was available for this case.
The specimen consists of a section of right lung. Scattered pulmonary arteries are blocked by ante-mortem thrombo-embolus and there are scattered areas of haemorrhagic consolidation, some pleural based. Anthracotic hilar lymph nodes are noted.
Diagnosis: Pulmonary embolism with early infarction

CASE 50517/82
The patient was a male aged 17.
The specimen consists of portions of both lungs. Throughout both lung fields are numerous rounded well-demarcated haemorrhagic and necrotic lesions measuring up to 3cm in diameter. On the reverse of the specimen is a similar but much larger lesion measuring 130x70mm which is outside of but compresses the left lung.
Diagnosis and comment: The lung lesions are obviously metastases and the larger lesion could be also. The latter, however, represents the primary lesion, a mediastinal malignant teratoma, which has metastasised to both lungs. Teratomas are tumours of germ cell origin which contain tissues from all three germ cell layers. Whilst the mediastinum is a well recognised site of origin of teratomas, these tumours most commonly occur in the testis in males (where they are typically malignant) and in the ovary (where they are usually benign) in females.

CASE 50577/82 (3 specimens)
The patient was a man aged 60 who had a strong history of exposure to asbestos and also smoked 10 cigarettes per day. He died nine months after presentation.
The specimen is presented within 3 pots. In all cases the pleura is abnormally thick and pale and encases the lung, also extending down the interlobar fissures and focally invading underlying lung. The hilar nodes are grossly enlarged and extensively replaced by pale tissue.
Diagnosis: Mesothelioma
Comment: This pattern of solid tumour encasing the lung is characteristic of mesothelioma but it may be mimicked by an adenocarcinoma of the lung or breast, which invades through to the pleural surface and then spreads in a transcoelomic manner over the pleura.

CASE 50578/82
The patient was a man aged 55.
The specimen of right lung shows an apical, pale, spherical mass 35mm in diameter with irregular margins that contains anthracotic pigment. Anthracotic hilar lymph nodes show replacement by pale tumour. The pleura is fibrotic especially at the base of the lung.
Diagnosis: Primary lung carcinoma with metastases in the hilar lymph nodes
Comment: Histology reportedly showed adenocarcinoma

CASE 50588/82
The patient was a man aged 61.
The specimen consists of the larynx opened from behind. Two cm below the true vocal cord is an irregular nodular mass 3cm in length which virtually obstructs the airway.
Diagnosis: Larynx: subglottic carcinoma

CASE 50597/82
The patient was a woman aged 65.
The specimen consists of a slice of lung containing an apical 30x20mm pale calcified mass with a surrounding rim of fibrous tissue.
Diagnosis: Old calcified apical tuberculosis

CASE 50029/83
The patient was a man aged 67.
The specimen consists of a portion of both lungs with trachea and main bronchi. The lungs are small and the pleural surface in places is nodular.The cut surface shows an increase in pale fibrous tissue with a honeycomb pattern of small air spaces in some areas. Patchy areas of pale consolidation are also present.
Diagnosis: Fibrosing alveolitis (diffuse interstitial fibrosis) with pneumonia

CASE 50035/83
No clinical history is available.
The specimen of right lung shows the main right pulmonary artery to be occluded by a mass of ante-mortem thrombo-embolus. The clot does not appear to be adherent to the wall indicating that it has only recently lodged at this site.
Diagnosis: Massive pulmonary embolus
On the basis of the pathological findings, what symptoms and signs would the patient have had during life? The patient may have had no warning and simply collapsed suddenly. Sometimes patients have small warning emboli before “the big one” and these may cause dyspnoea, pleuritic chest pain and possible haemoptysis. Only 50% of patients with a DVT have any signs or symptoms related to the leg.

CASE 50052/83
The patient was a man aged 36 who had Hodgkin's disease that could not be controlled by chemotherapy.
The specimen consists of a slice of left lung in which there are numerous spherical pale masses up to 15mm diameter with ill-defined margins. Some show central haemorrhage and/or necrosis.
Diagnosis: Hodgkin's disease
Comment: Without the clinical history, metastasis is the preferred diagnosis from the macroscopic appearance.

CASE 50384/83
The patient was a man aged 76.

The specimen consists of a slice of right lung. A large pale focally necrotic mass 8cm in diameter occupies much of the upper lobe. The bronchial tree contains clotted blood. There is marked anthracosis and some emphysema.
Diagnosis: Primary carcinoma of the lung (large cell undifferentiated type)

CASE 50450/83
The patient was a woman aged 66.
The specimen is a slice of lung (?right) which appears abnormally pale. The alveolar airspaces appear larger than normal and their walls are thickened by fibrous tissue, giving a honeycomb pattern. There may also be some patchy, pale bronchopneumonic consolidation (subtle).
Diagnosis: Fibrosing alveolitis (diffuse interstitial fibrosis)
On the basis of the pathological findings, what symptoms and signs would the patient have had during life?
Patients develop increasingly severe dyspnoea and in advanced cases hypoxia and cyanosis. On examination they have symmetrically decreased chest expansion, increased vocal resonance and on auscultation harsh vesicular breath sounds with prolonged expiration and end inspiratory crackles not influenced by coughing. They may eventually develop signs of right heart failure secondary to pulmonary hypertension i.e. raised JVP and pitting oedema of the ankles.

CASE 50473/83
The patient was a man aged 76 who had congestive cardiac failure.
The specimen of left lung shows a large pulmonary thrombo-embolus at the hilum with smaller emboli occluding vessels more distally seen from the back of the specimen. There is no evidence of infarction.
Diagnosis: Pulmonary embolus

CASE 50195/96
The patient was a previously well 25 year old male who was admitted to hospital with a 6 day history of feeling unwell with productive cough, wheezing, shortness of breath, vomiting and night sweats. On admission he was febrile and pale and a chest x-ray revealed diffuse nodular opacities of both lungs. Serology suggested recent infection with Influenza A. Despite extensive investigation and active management the patient's condition deteriorated and he died 6 days after admission.
The specimen of left lung demonstrates widespread areas of consolidation, some centred around bronchi. The walls of larger bronchi are thickened and inflamed and covered by patches of yellow slough.
Diagnosis: Bronchopneumonia with features suggestive of invasive aspergillosis.
Comment: The question is, why would a previously well 25 year old man die from bronchopneumonia, despite adequate treatment? Histological examination revealed that the areas of consolidation contained *Aspergillus fumigatus,* a fungal organism. But why would an apparently well young man get a fungal bronchopneumonia which normally occurs only in immunocompromised individuals? He had been tested for HIV during life and was negative and no other possible cause of immunocompromise could be determined. Fatal pulmonary infection with *Aspergillus fumigatus* has however been described following Influenza A infection which may cause a transient alteration of the host immune response and increase susceptibility to various infectious agents.

CASE 50196/96

The patient was a 49 year old man with a history of smoking a pack of cigarettes a day. He was admitted to hospital with symptoms of respiratory failure due to suspected atypical pneumonia. On admission he was febrile (38.5°C) with peripheral cyanosis and increasing respiratory distress. Chest x-ray revealed extensive bilateral consolidation and cultures of tracheal aspirates grew *Legionella pneumonphila 1*. Despite treatment the patient died 4 days after admission.

The specimen comprises a portion of right lung demonstrating poorly defined areas of pale consolidation in an irregular distribution throughout all lobes.

Diagnosis: Bronchopneumonia. Post-mortem culture of the tissue grew *Legionella pneumophila 1*.

CASE 25176/99

The patient was a 32 year old man with a history of possible aspiration.

The specimen consists of lung which shows widespread abscess formation and consolidation. The abscesses are lined by necrotic yellow slough. The pleura is fibrotically thickened and haemorrhagic.

Diagnosis: Pneumonia with lung abscesses